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Recommended Citation

Robert L. Glicksman & Sandra B. Zellmer, Improving Water Quality Antidegradation Policies, 4 Geo. Wash. J. Energy & Envtl. L., Vol. 4, No. 1 (2013).

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Improving Water Quality Antidegradation Policies

Sandra Zellmer and Robert L. Glicksman*

The visual images that helped spur the enactment of the nation's foundational environmental laws during the 1970s, including the Clean Water Act ("CWA"),[1] were largely of contaminated resources, such as burning rivers and oil-soaked seagulls.[2] Similarly, evocative prose, such as Rachel Carson's description of the "strange blight"[3] afflicting America in the 1960s as a result of the use of chemical pesticides, played a critical role in alerting policymakers and the public to the need for new legal protections for public health and the environment. Over the years, similar depictions of the environmental devastation resulting from unconstrained economic activity have continued to play an important role in creating the momentum for the adoption of new or strengthened environmental laws.[4]

Environmental law, however, has always been about more than just repairing the damage wrought by past environmental disasters or mismanagement. Senator Edmund Muskie, the principal sponsor of the CWA, for example, was moved to action not only by the environmental despoliation he witnessed, but also by "[t]he beauties of nature . . . in almost pristine form" at which he marveled while growing up.[5] The nation's environmental laws were adopted as much to preserve superior environmental quality as to restore damaged or degraded resources.[6]

The CWA reflects this dual conception of the function of environmental law. Its principal goals are "to restore and *maintain* the chemical, physical, and biological integrity" of the nation's surface water bodies.[7] The Act's adoption was spurred largely by the realization that unchecked pollution had caused the degradation of those waters, making them unsuitable for uses such as fishing and swimming.[8] At the time Congress passed the statute, however, some lakes, rivers, and streams had water quality that was better than what was needed to support these uses.[9] An important question was whether the statute would limit discharges with the potential to impair these high-quality waters. The U.S. Environmental Protection Agency's ("EPA") antidegradation policy provided an affirmative answer.[10] Yet, the CWA's maintenance goal has taken a decided backseat to its restoration goal, as

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Authors' note: Professor Zellmer thanks research assistants Emily Rose and Samantha Staley, as well as Erik Schlenker-Goodrich of the Western Environmental Law Center for his insights on protected areas. Professor Glicksman thanks research assistants Melissa Dolin and Erin Dykstra.

1. Clean Water Act of 1972 ("CWA"), Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251–1376 (2006)).
2. *See* Richard J. Lazarus, The Making of Environmental Law 59 (2004) (describing "visually unsettling events" such as the smoldering Cuyahoga River and "seagulls suffocated in oil as a result of the Santa Barbara oil spill).
3. Rachel Carson, Silent Spring (Houghton Mifflin 1994), *quoted in* Robert L. Glicksman et al., Environmental Protection: Law and Policy 18 (6th ed. 2011).
4. *See, e.g.*, Martha L. Judy & Katherine N. Probst, *Superfund at 30*, 11 Vt. J. Envtl. L. 191, 192–93 (2009) (describing "sites regularly featured on the television news and in news magazines in the late 1970s and early 1980s [that] set the stage for passage of Superfund," including the "'Valley of the Drums,' [which] imprinted on the screen and in the minds of the American public colorful images of erupting, smoking, seeping, and corroding drums"); Tina M. Smith, *Wildlife Protection and Offshore Drilling: Can There Be a Balance Between the Two?*, 6 Fla. A&M U. L. Rev. 349, 366 (2011) (quoting, Prince William's Oily Mess: A Tale of Recovery, NOAA Ocean Serv. Educ., http://oceanservice.noaa.gov/education/stories/oilymess/oily01_infamous.html) (last updated Mar. 25, 2008)) ("The images Americans saw on television and the descriptions they heard over the radio [after the *Exxon Valdez* oil spill] were of heavily oiled shorelines, dead and dying wildlife and thousands of workers mobilized to clean beaches.").
5. Robert F. Blomquist, *"To Stir Up Public Interest": Edmund S. Muskie and the U.S. Senate Special Subcommittee's Water Pollution Investigations and Legislative Activities, 1963–66—A Case Study in Early Congressional Environmental Policy Development*, 22 Colum. J. Envtl. L. 1, 6 (1997) (quoting Edmund S. Muskie, Journeys 79–80 (1972)).
6. *See, e.g.*, The Wilderness Act of 1964, 16 U.S.C. § 1131(a) (2006) (enunciating Congress's goal of administering wilderness areas "in such manner as will leave them unimpaired for the future use and preservation as wilderness, so as to provide for the protection of these areas [and] the preservation of their wilderness character").
7. CWA § 101(a), 33 U.S.C. § 1251(a) (2006) (emphasis added).
8. N. William Hines, *A Decade of Nondegradation Policy in Congress and the Courts: The Erratic Pursuit of Clean Air and Clean Water*, 62 Iowa L. Rev. 643, 658 (1977).
9. *See id.* (showing that state standards previously permitted degradation of high-quality waters).
10. *Id.* at 662.

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both the paucity of statutory text on antidegradation issues[11] and the emphasis of federal and state implementation on improving the quality of impaired waters attest.[12]

This Article focuses on the CWA's relatively neglected maintenance aspects. It assesses whether the statute's antidegradation policy for protecting superior water quality has fostered the statutory maintenance goal. Part I traces the history of the antidegradation policy and analyzes the rationales for precluding the degradation of high-quality environmental resources. The objectives of, and justifications for, preventing the deterioration of high-quality resources are best illustrated by comparing the antidegradation program adopted under the CWA with the version adopted under the Clean Air Act ("CAA"), which is the most elaborate antidegradation program in domestic federal pollution control legislation. Part II assesses whether the CWA's antidegradation mechanisms have succeeded in promoting the goals of a well-functioning environmental quality maintenance program, identifying several flaws in the CWA program's design and implementation. Part III compares the CWA's antidegradation policy to nonimpairment and nondegradation mandates under the nation's public natural resource management statutes.

Based on this comparative analysis, and the past four decades of experience with the CWA, Part IV recommends four reforms to strengthen the CWA's antidegradation policy. First, we recommend a federal regulation requiring all states to designate high-quality waters within their borders for the highest level of protection against degradation of water quality, including waters within parks and wildlife refuges. We also support requiring states to take concrete steps to restore the quality of degraded high quality or exceptional waters so that they can support a full suite of beneficial uses and ecosystem services. Second, the CWA's antidegradation program should preclude water quality impairment that either results in loss or threatened loss of an existing or potentially viable use—especially fishing, swimming, and higher uses—or adversely affects the ecological resilience of the affected water body. Third, we support extending the scope of antidegradation requirements to cover sources that are exempt in many states, such as nonpoint sources that create polluted runoff. Finally, the CWA's antidegradation program should include mandatory planning and assessment responsibilities, particularly as applied to the highest quality waters. These reforms would help fulfill the objectives of an antidegradation program, move the nation closer to the goal of ensuring the integrity of our surface waters, and help the CWA function as more than just a rudimentary pollution control regime.

I. The History, Structure, and Goals of the Antidegradation Program

Federal efforts to prevent degradation of water quality predate the adoption of the CWA. Congress endorsed these efforts in the CWA, although the cryptic manner in which it did left the scope and content of the resulting antidegradation program unclear.[13] This Part reviews the history of federal efforts to prevent degradation of water resources and the structure of the current regulatory program. It also describes the goals of federal antidegradation provisions, which are reflected not only in the CWA, but also in the CAA's prevention of significant deterioration program. Because this Article measures the success of the CWA's antidegradation program against the overarching justifications for antidegradation programs generally, the objectives of the CAA's prevention of significant deterioration program are just as relevant to an assessment of the CWA program as are the stated goals of the CWA itself.[14] In short, the parallels between the CAA and CWA approaches to antidegradation "are absolutely clear."[15]

A. The History of Federal Antidegradation Programs in Water Pollution Control

Before EPA's creation in 1970, the Department of the Interior adopted guidelines to implement the 1965 Water Quality Act,[16] which required all states to adopt water quality standards consisting of use designations (such as drinking or fishing) and water quality characteristics needed to permit those uses to occur.[17] The guidelines provided that "[i]n no case will standards providing for less than existing water quality be acceptable," and required that standards provide for "[t]he maintenance and protection of quality and use or uses of water now of a higher quality or of a quality suitable for present and potential uses."[18] Enforcement of the guidelines was cursory, however.[19]

In 1968, Interior Secretary Stewart Udall endorsed the policy of preventing degradation of existing clean water resources,[20] but retreated from the absolute protection of

11. *Id.* at 673.
12. *Id.* at 674.
13. Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (1977).
14. The relevance of the goals of preventing degradation of one environmental medium to efforts to protect a different resource is reflected in the adoption of the Clean Air Act ("CAA") in 1970. As indicated below at notes 16–24 and accompanying text, by that time, the Department of the Interior had already adopted an antidegradation program for water pollution. The Nixon Administration advanced the policy rationales that supported Interior's water program when it supported the adoption of a protection against "backsliding" in the proposed air pollution legislation. *See* William H. Rodgers, Environmental Law: Air and Water 351 (1986). *Cf.* Oliver A. Houck, The Clean Water Act TMDL Program: Law, Policy, and Implementation 192 (1999) (noting that once the U.S. Environmental Protection Agency ("EPA") "thought its way through the mechanics of meeting [the] statutory goals" of CAA programs like the prevention of significant deterioration program, the agency had the opportunity to "ratify" these goals in other statutory contexts, including the CWA's water quality standards program).
15. Jeffrey Gaba, *New Sources, New Growth and the Clean Water Act*, 55 Ala. L. Rev. 651, 663 n.72 (2004) [hereinafter Gaba, *New Growth*] (noting the "lack of detail in the CWA . . . in sharp contrast with" the "well-established requirements" of the CAA's prevention of significant deterioration program).
16. Water Quality Act of 1965, Pub. L. No. 89-234, 79 Stat. 903 (1965).
17. *Id.* at 908.
18. Hines, *supra* note 8, at 658 (quoting Fed. Water Pollution Control Admin., U.S. Dep't of Interior, Guidelines for Establishing Water Quality Standards for Interstate Waters 5, 7 (1966)).
19. *See* Mary A. Stitts, Note, *The Ever-Changing Balance of Power in Interstate Water Pollution: Do Affected States Have Anything to Say After* Arkansas v. Oklahoma*?*, 50 Wash. & Lee L. Rev. 1341, 1356 (1993).
20. Lauren Kalisek, *The Principle of Antidegradation and Its Place in Texas Water Quality Permitting*, 41 Tex. Envtl. L.J. 1, 5 (2010). *See also* Jeffrey M. Gaba, *Federal Supervision of State Water Quality Standards Under the Clean Water Act*,

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existing water quality reflected in the 1966 guidelines.[21] The Secretary's policy required maintenance of waters whose quality was better than established standards unless a state could justify degradation based on necessary economic or social development. Still, the policy did not allow degradation to interfere with current designated uses or uses that could be made of those waters.[22]

Despite the weakening of the 1966 guidelines, state governors and the U.S. Chamber of Commerce complained that an antidegradation policy would unreasonably restrict economic development, and state enforcement of the guidelines continued to lag.[23] By the time Congress adopted the Federal Water Pollution Control Act Amendments of 1972 (now known as the CWA), the water quality standards of all fifty states nominally included versions of an antidegradation policy statement. In most states, however, protection against degradation was little more than an unimplemented objective.[24]

The 1972 law did not expressly include an antidegradation policy.[25] EPA, which took control over federal water quality programs created in 1972, subsequently argued that such a policy was "consistent with the spirit, intent, and goals of the Act," especially the goal of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters."[26] EPA refined the policy in 1975, creating the requirements that, with few changes, remain in place today.[27] In 1987, Congress cryptically addressed antidegradation of water quality for the first time, providing that for waters whose quality exceeds levels necessary to protect the designated use, any effluent limitation based on a total maximum daily load ("TMDL")[28] may be revised only if the revision "is subject to and consistent with the antidegradation policy established under this section."[29] The statute, which still governs antidegradation policy, simply incorporates by reference EPA's prior administrative policy.[30]

B. The Structure of the Antidegradation Program

An antidegradation policy is a required component of the water quality standards that states must adopt and enforce.[31] EPA regulations require the states to include three elements in their antidegradation policies.[32] First, existing instream uses, and the level of water quality necessary to protect those uses, must be maintained and protected—state standards must be "sufficient to maintain existing beneficial uses of navigable waters, preventing their further degradation."[33] Second, the state must maintain water quality that exceeds levels necessary to support recreation and the propagation of fish and wildlife unless allowing lower water quality is necessary to accommodate important economic or social development.[34] Even then, water quality standards must fully protect existing uses.[35] In addition, the state must assure achievement of the highest statutory and regulatory requirements for all point sources[36] and all cost-effective and reasonable best management practices for nonpoint sources.[37] Third, the state must maintain quality in high-quality waters that constitute an "outstanding National resource," including waters of national and state parks and wildlife refuges and waters of "exceptional recreational or ecological significance."[38] In short, the policy requires different levels of protection for three types, or tiers, of waters.[39] Under

36 Vand. L. Rev. 1167, 1189–90 (1983) [hereinafter Gaba, *Federal Supervision*]; Michael C. Blumm & William Warnock, *Roads Not Taken: EPA vs. Clean Water*, 33 Envtl. L. 79, 104 (2003).

21. Hines, *supra* note 8, at 659.
22. Kalisek, *supra* note 20, at 5–6. *See* Water Quality Standards Regulation, 40 Fed. Reg. 55334, 55340 (Nov. 28, 1975) (codified at 40 C.F.R. pt. 130).
23. Michael Snyder, Note, *Nondegradation of Water Quality: The Need for Effective Action*, 50 Notre Dame L. Rev. 890, 893, 897 (1975).
24. Hines, *supra* note 8, at 659–60.
25. Snyder, *supra* note 23, at 895.
26. CWA § 101(a), 33 U.S.C. § 1251(a) (2006). *See* U.S. Envtl. Prot. Agency, Questions and Answers on Antidegradation 1 (1985) [hereinafter Questions & Answers], *available at* http://water.epa.gov/scitech/swguidance/standards/upload/2006_12_01_standards_antidegqa.pdf.
27. Antidegradation Policy, 40 C.F.R. § 131.12 (2011). EPA amended the policy in 1983. It created a limited exception for temporary or short-term changes in water quality in Outstanding National Resource Waters ("ONRW"), which previously had been protected from all degradation. John Harleston, *What Is Antidegradation Policy: Does Anyone Know?*, 5 S.C. Envtl. L.J. 33, 47 (1996). EPA made this change because it "was concerned that waters which properly could have been designated as ONRW were not so designated because of the flat no degradation provision, and therefore were not being given special protection." Water Quality Standards Regulation, 48 Fed. Reg. 51400, 51402 (Nov. 8, 1983) (to be codified at 40 C.F.R. pts. 35, 120, 131). *See also* Robert L. Glicksman, *Pollution on the Federal Lands II: Water Pollution*, 12 UCLA J. Envtl. L. & Pol'y 61, 83 (1993); John L. Horwich, *Water Quality Nondegradation in Montana: Is Any Deterioration Too Much?*, 14 Pub. Land L. Rev. 145, 158–60 (1993).
28. A total maximum daily load ("TMDL") is the maximum aggregate pollution loading that the receiving water is capable of assimilating without violating applicable water quality standards by creating excessive pollutant concentrations or interfering with designated uses. Glicksman et al., *supra* note 3, at 627.
29. CWA § 303(d)(4)(B), 33 U.S.C. § 1313(d)(4)(B) (2006).
30. Gaba, *New Growth*, *supra* note 15, at 672.
31. PUD No. 1 of Jefferson Cnty. v. Wash. Dep't of Ecology, 511 U.S. 700, 718–19 (1994).
32. 40 C.F.R. § 131.12(a). According to one court, the requirement to adopt an antidegradation policy does not apply to CWA permitting programs administered by federal agencies. City of Olmsted Falls v. U.S. Envtl. Prot. Agency, 435 F.3d 632, 637 (6th Cir. 2005) (finding antidegradation policy inapplicable to federal issuance of dredge and fill permits). The CWA provides, however, that all federal agencies must comply with state water quality standards, including a state's antidegradation policy. CWA § 313(a), 33 U.S.C. § 1323(a) (2006); Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1153 (9th Cir. 1998).
33. *PUD No. 1 of Jefferson Cnty.*, 511 U.S. at 705. *See also* Questions & Answers, *supra* note 26, at 3 (stating that "no activity is allowable . . . which could partially or completely eliminate any existing use").
34. 40 C.F.R. § 131.12(a)(2). Aside from an unrealistic no discharge goal, the CWA's primary goal is to achieve, wherever attainable, "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water . . . ." CWA § 101(a)(2), 33 U.S.C. § 1251(a)(2) (2006).
35. 40 C.F.R. § 131.12(a)(1).
36. A point source is defined under the CWA to include "any discernible, confined and discrete conveyance," such as a pipe. CWA § 502(14), 33 U.S.C. § 1362(14) (2006). Any source of water pollution that is not a point source is a nonpoint source, which generates diffuse pollution that creates runoff into surface water bodies. Glicksman et al., *supra* note 3, at 593, 684–85.
37. 40 C.F.R. § 131.12(a)(2).
38. *Id.* at § 131.12(a)(3) (2011).
39. EPA has endorsed the adoption by some states of an additional tier, Tier 2.5, that protects waters to a greater degree than Tier 2 but not as much as Tier 3. Tier 2.5 waters require "a very high level of water quality protection without precluding unforeseen future economic and social development considerations." Nat'l Wildlife Fed'n v. Browner, 127 F.3d 1126, 1127 (D.C. Cir. 1997) (describing Tier 2.5 protection for Lake Michigan) (quoting U.S. Envtl. Prot. Agency, EPA-838-B-12-002, Water Quality Standards Handbook § 4.2, at 4-2 (2d ed. 1994), *available at* http://water.epa.gov/scitech/swguidance/standards/handbook/index.cfm). *See also* Ohio Valley Envtl. Coal. v. Horinko, 279 F. Supp. 2d 732, 773–74 (S.D. W. Va. 2003) (approving in

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Tier 1, existing uses must be maintained in all waters.[40] Under Tier 2—high-quality waters that exceed fishable/swimmable quality—degradation will be allowed only if it is necessary to accommodate important social or economic development in the region.[41] Degradation of water quality is completely prohibited for Tier 3, Outstanding National Resource Waters ("ONRW"),[42] although "temporary and short-term changes" in water quality to accommodate important economic uses are allowed.[43] Thus, the policy is designed to protect both existing uses and existing water quality, but in different circumstances. The Tier 1 provisions are directed at the protection of existing uses, while the Tier 2 component aims to protect the quality of high-quality waters.[44] Tier 3 also protects water quality.[45]

The antidegradation policy affects states administering the CWA and discharging sources in several ways. States must review and, if appropriate, revise their water quality standards at least once every three years.[46] Any such revisions must comply with the antidegradation policy.[47] If a state fails to adopt an adequate antidegradation policy, EPA must adopt one for the state.[48] If a state issues a discharge permit for a point source that violates the antidegradation policy, then EPA may veto the permit.[49] EPA may also reject TMDLs that violate the policy.[50]

In addition, the CWA requires those seeking a federal license or permit for an activity that may result in a discharge (such as the operation of a hydropower plant or the filling of wetlands) to provide a certification that the discharge will comply with state water quality standards.[51] Without such a certification, the federal agency may not issue the license or permit.[52] Activities covered by this requirement include discharges requiring a CWA permit in a state in which EPA, rather than a state, administers the permit program.[53] If a state's certification for an EPA-issued discharge permit fails to comply with the antidegradation policy, then EPA may add more stringent effluent limitations to ensure compliance.[54]

C. The Goals of Antidegradation Programs

The reasons to mandate the improvement of inferior quality natural resources are relatively obvious, and include ensuring that exposure to, or use of, those resources does not adversely affect public health, destroy critical wildlife or fish populations, or otherwise disrupt ecosystem functions.[55] By contrast, no single goal explains legal mandates to prevent degradation of superior quality resources. Instead, antidegradation programs rest on a variety of rationales that tend to be relevant without regard to the environmental medium involved, including the desire to provide a margin of safety to offset the risk that regulations will not provide the desired level of protection, protect special value natural resources, prevent the movement of industry to areas with superior environmental quality, prevent interstate pollution, and preserve opportunities for future economic growth.[56] The CWA and CAA, which contain the best known antidegradation programs among the pollution control laws, both illustrate these justifications for preventing degradation of high-quality resources, and the justifications advanced in support of both the CWA and CAA programs provide appropriate yardsticks for evaluating any antidegradation effort.[57]

part and disapproving in part West Virginia's provisions for Tier 2.5). "Because Tier 2.5 is not required by EPA regulations, the only restriction on [a state's] Tier 2.5 standards is that they not fall below the minimum standards set for Tier 2." *Id*. at 773.

40. U.S. Envtl. Prot. Agency, *supra* note 39, at 4-1.
41. *Id*.
42. Kalisek, *supra* note 20, at 9. *See also* Columbus & Franklin Cnty. Metro. Park Dist. v. Shank, 600 N.E.2d 1042, 1055–56 (Ohio 1992) (refusing to equate degradation of existing water quality with an interference with an existing use for purposes of application of Ohio's antidegradation rules to high-quality waters, and rejecting state agency's application of a technological approach that limited pollutants to a level consistent with water quality criteria for exceptional waters because "the analysis proceeds from a false premise that the applicable water quality standard is determined by the use designation rather than the antidegradation policy.").
43. Water Quality Standards Regulation, 48 Fed. Reg. at 51403; U.S. Envtl. Prot. Agency, *supra* note 39, at 4-10.
44. Gaba, *Federal Supervision*, *supra* note 20, at 1,192.
45. U.S. Envtl. Prot. Agency, *supra* note 39, at 4-1.
46. CWA § 303(c)(1), 33 U.S.C. § 1313(c)(1) (2006).
47. CWA § 303(c)(2)(A), 33 U.S.C. § 1313(c)(2)(A).
48. CWA § 303(c)(4), 33 U.S.C. § 1313(c)(4); Raymond Proffitt Found. v. U.S. Envtl. Prot. Agency, 930 F. Supp. 2d 1088, 1098 (E.D. Pa. 1996) (holding that EPA has a nondiscretionary duty to issue a federal antidegradation program for a state with a deficient program). *Cf*. Miccosukee Tribe of Indians of Fla. v. U.S. Envtl. Prot. Agency, 105 F.3d 599 (5th Cir. 1997) (holding that district court improperly dismissed CWA citizen suit alleging that EPA violated nondiscretionary duty to determine whether state changes to water quality standards violated CWA requirements, including the antidegradation policy). *But cf*. Nat'l Wildlife Fed'n v. Browner, 127 F.3d 1126, 1126 (D.C. Cir. 1997) (holding that EPA did not have nondiscretionary duty to review and evaluate existing state water quality standards retained after a state's triennial review).
49. CWA § 402(d), 33 U.S.C. § 1342(d) (2006).
50. Questions & Answers, *supra* note 26, at 2.
51. CWA § 401(a), 33 U.S.C. § 1341(a) (2006).
52. *Id*. *See* Islander E. Pipeline Co. v. McCarthy, 525 F.3d 141 (2d Cir. 2008) (upholding denial of state certification for natural gas pipeline on ground that backfill discharge would violate state's antidegradation policy); FPL Energy Maine Hydro LLC v. Dep't of Envtl. Prot., 926 A.2d 1197 (Me. 2007) (dam and reservoir facilities not exempt from antidegradation policy); Pub. Util. Dist. No. 1 v. Dep't of Ecology, 51 P.3d 744 (Wash. 2002) (holding that § 101(g) of the CWA did not preclude state environmental agency from imposing minimum streamflow requirements in water quality certification on holder of state water rights). *But cf*. Great Basin Mine Watch v. Hankins, 456 F.3d 955, 964 (9th Cir. 1996) ("The antidegradation policy only refers to water quality standards and does not refer to water withdrawal."). Federal agencies may have the power to impose conditions on licensees that are more protective of water quality than a state certification. *See, e.g.*, Snoqualmie Indian Tribe v. Fed. Energy Regulatory Comm'n, 545 F.3d 1207 (9th Cir. 2008).
53. Arkansas v. Oklahoma, 503 U.S. 91 (1992). Most states have received EPA approval to administer at least portions of the Clean Water Act's National Pollutant Discharge Elimination System permit program. *State Program Status*, U.S. Envtl. Prot. Agency, http://cfpub.epa.gov/npdes/statestats.cfm (last updated Apr. 14, 2003).
54. Questions & Answers, *supra* note 26, at 2.
55. CWA § 101(a)(2), 33 U.S.C. § 1251(a)(2) (2006).
56. *See, e.g.*, Craig N. Oren, *The Protection of Parklands From Increased Air Pollution: A Look at Current Policy*, 13 Harv. Envtl. L. Rev. 313, 315–16 (1989) [hereinafter Oren, *Parklands*].
57. Other federal pollution control laws seek to prevent degradation of existing environmental quality less directly, by incorporating the antidegradation regimes established under other laws instead of creating independent requirements. *See, e.g.*, 40 C.F.R. § 265.193(g)(2)(iii)(D) (2011) (Resource Conservation and Recovery Act regulations requiring EPA, in issuing variances from hazardous waste management requirements, to consider the potential adverse effects of a release on surface water quality, taking into account water quality standards, including the antidegradation policy, established for surface waters in the area of the affected facility). Similarly, the Comprehensive Environmental Response, Compensation, and Liability Act provides that if any requirement under a federal law such as the CWA is "legally applicable to" a hazardous

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1. Providing a Margin of Safety

The CAA and the CWA both require the adoption of ambient quality standards to provide a minimally acceptable level of environmental quality. The CAA requires that EPA adopt primary standards, which are necessary to protect the public health with an adequate margin of safety, and secondary standards, which protect the public welfare from known or anticipated adverse effects associated with air pollution.[58] The CWA requires states to adopt water quality standards that assure that pollutant concentrations will not exceed levels that will impair designated uses.[59] Both sets of standards establish maximum permissible concentrations of pollutants in the air or water, respectively.[60]

Environmental regulation often proceeds in the face of scientific uncertainty. As a result, regulators may determine that a particular concentration level is sufficient to achieve the desired level of protection, only to discover later that adverse effects occur at lower pollution concentrations than once believed. Antidegradation rules can protect against such misjudgments.[61]

One of the purposes of the CAA's Prevention of Significant Deterioration ("PSD") program is to protect public health "from any actual or potential adverse effect which in [EPA's] judgment may reasonably be anticipated to occur from air pollution . . . notwithstanding attainment and maintenance of all national ambient air quality standards."[62] Legislators in 1977 were skeptical of regulators' ability to identify harmless concentrations of air pollution and suspected that the only way to eliminate health risks would be to set ambient standards at zero.[63] Not willing to go that far, legislative supporters of the PSD program sought to minimize risk by keeping pollutant concentrations lower than required by air quality standards in areas that already had clean air.[64] In this way, the program would provide a "margin of safety" if pollution actually caused harm at concentrations lower than any threshold levels identified by EPA, or if EPA refused, for economic or political reasons, to tighten the standards despite new evidence that existing standards were not sufficiently protective.[65] Accordingly, antidegradation requirements create a safety net in the event existing ambient quality standards are inadequate.[66]

2. Protecting Special Natural Resources

A second function of antidegradation constraints is to protect highly valued or vulnerable natural resources that may be at risk from exposure to pollutant concentrations that are established to protect public health. Both the CAA and CWA programs seek to promote that goal.[67]

One of the purposes of the CAA's PSD program is to preserve, protect, and enhance air quality in national parks, wilderness areas, and other areas of "special" natural, recreational, scenic, or historic value.[68] Because adverse effects on natural resources may occur at concentrations lower than those that trigger health risks, the CAA's welfare-based secondary standards may be more stringent than the health-based primary standards.[69] Even then, secondary standards may not be adequate to protect particularly vulnerable resources, or EPA may have underestimated how clean the air needs to be to protect those resources.

During congressional debate, supporters of the PSD program emphasized the benefits of protecting parks from air pollution, claiming that preservation of clean air would prevent damage that would occur even at pollution concentrations allowed by the national ambient air quality standards.[70] Degradation of air quality in national parks would interfere with scenic vistas in places like the Grand Canyon and damage unique natural resources, frustrating the opportunities for preservation, recreation, and spiritual renewal that justified the creation of national parks and other protected areas.[71] The CWA's antidegradation policy serves the same function through its prohibition on water quality degradation in ONRWs.[72] Enhanced protections are particularly critical if resource damage is expected to be

substance release or is "relevant and appropriate under the circumstances of the release," then the remedial action selected by EPA must comply with that requirement. At a minimum, the action must attain relevant and appropriate water quality criteria found in CWA water quality standards. 42 U.S.C. § 9621(d)(2)(A) (2006). For a case holding that a state groundwater antidegradation law was "legally applicable or relevant and appropriate" to a cleanup, but upholding EPA's implicit waiver of that law, see *United States v. Akzo Coatings of Am., Inc.*, 949 F.3d 1409, 1445–49 (6th Cir. 1991).

58. CAA § 109(b), 42 U.S.C. § 7409(b) (2006).
59. CWA § 303(c), 33 U.S.C. § 1313(c) (2006).
60. CAA § 109(b), 42 U.S.C. § 7409(b); CWA § 304(a)(2)(B), 33 U.S.C. § 1314(a)(2)(B) (2006).
61. CAA § 160(1), 42 U.S.C. § 7470(1) (2006) (emphasis added) (stating that one purpose of the PSD program is to protect public health "from any actual *or potential* adverse effect which in [EPA's] judgment *may reasonably be anticipated to occur* from air pollution . . . *notwithstanding* attainment and maintenance of all national ambient air quality standards").
62. *Id.*
63. *See* David P. Currie, *Nondegradation and Visibility Under the Clean Air Act*, 68 Calif. L. Rev. 48, 77 (1980).
64. *Id.*
65. *See* Craig N. Oren, *Prevention of Significant Deterioration: Control-Compelling Versus Site-Shifting*, 74 Iowa L. Rev. 1, 64 (1988) [hereinafter Oren, *Control-Compelling*]. Supporters of the Prevention of Significant Deterioration ("PSD") program also viewed the program as necessary because the national standards did not cover certain damaging pollutants such as sulfates that cause acid rain and failed to account for the synergistic effects of multiple pollutants. *Id.* at 60, 82.
66. Richard B. Stewart, *The Development of Administrative and Quasi-Constitutional Law in Judicial Review of Environmental Decisionmaking: Lessons From The Clean Air Act*, 62 Iowa L. Rev. 713, 742 n.144 (1977) [hereinafter Stewart, *Quasi-Constitutional Law*].
67. CAA § 160, 42 U.S.C. § 7470 (2006); CWA § 101(c), 33 U.S.C. § 1251(c) (2006).
68. CAA § 160(2), 42 U.S.C. § 7470(2). *See generally* Oren, *Parklands*, *supra* note 56.
69. David Wooley & Elizabeth Morss, Clean Air Act Handbook, Appendix C (2011). In practice, EPA rarely establishes separate secondary standards. *See* Glicksman et al., *supra* note 3, at 406.
70. Oren, *Parklands*, *supra* note 56, at 329.
71. *Id.* at 315, 346–47.
72. *See* Glicksman et al., *supra* note 3, at 616.

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irreversible or to interfere with critical ecosystem functions or services.[73]

3. Preventing the Development of Pollution Havens

Without a nondegradation policy, areas with relatively clean air or water quality would have a greater capacity to assimilate pollution without violating applicable ambient standards than would more polluted areas.[74] Under both the CAA and CWA, pollution control requirements tend to be most stringent in highly polluted areas that are in violation of ambient quality standards. The CAA imposes rigorous controls on pollution sources in nonattainment areas,[75] and the stringency of the controls tends to increase in relation to the degree of noncompliance.[76] Under the CWA, states whose waters are more polluted than state water quality standards allow must establish TMDLs that represent aggregate limitations on discharges into those impaired waters.[77] Absent nondegradation programs, new industrial sources with choices about where to locate (putting other factors aside) would tend to choose areas with less stringent pollution controls to reduce costs of operation.[78] The result would be not only degradation of existing good environmental quality, but also an exodus of business from industrialized areas to more remote, cleaner areas.

Antidegradation provisions can prevent "pollution havens" by removing incentives that would drive industry to clean areas if they were allowed to deteriorate to minimal levels required by ambient standards. These provisions address a classic prisoner's dilemma because states with high air or water quality would bear most of the costs of maintaining it, while recouping only a small portion of the benefits.[79] "Each state, fearing undercutting by a state competing for economic development, would be reluctant to adopt a potentially disabling policy absent some assurance about what other states intended to do. All states would thus be paralyzed to act."[80] The CAA's PSD program was designed to neutralize the attractiveness to industry of areas with superior air quality.[81] The CWA's antidegradation policy serves a similar function.[82]

4. Preventing Interstate Pollution

The CAA's PSD program also sought to prevent activities in one state from harming other states by preventing areas from becoming "'dumping grounds' for the pollution caused by industrial sources in other regions."[83] The argument was apparently persuasive. One of the goals of the program is "to assure that emissions from any sources in any State will not interfere with any portion of the applicable implementation program to prevent significant deterioration of air quality for any other State."[84]

A dispute between Arkansas and Oklahoma illustrates the potential for the CWA's antidegradation policy to constrain interstate water pollution. The city of Fayetteville, Arkansas, applied for a permit from EPA that would allow its new municipal wastewater treatment plant to discharge treated wastewater into a tributary of the Illinois River about forty miles upstream from the Arkansas-Oklahoma border.[85] Oklahoma protested, arguing that the discharge would impair a portion of the River it had designated as a Tier 3 scenic river.[86] EPA issued the permit anyway, finding that the discharge would not result in a violation of Oklahoma's water quality standards.[87] Responding to Oklahoma's challenge to the permit, the Supreme Court agreed that both the CWA and EPA's own regulations[88] authorize EPA to ensure that a discharge does not violate downstream water quality standards.[89] The Court, however, affirmed EPA's finding that the treatment plant's discharge would not cause an actual, detectable violation of the Oklahoma standards.[90] Indeed, the Court concluded that it was not arbitrary for EPA to base issuance of the permit partly on the benefits to the river resulting from the increased flow of relatively clean water from the new plant.[91] The Court's decision endorsed EPA's view that the CWA bars interstate pollution that causes

73. *See, e.g.*, Robert W. Adler, Jessica C. Landman, & Diane M. Cameron, The Clean Water Act: 20 Years Later 200 (1993) (noting that headwater tributaries of larger watersheds can "provide clean base flow and critical spawning and rearing habitat to support downstream flows").
74. *See* Hines, *supra* note 8, at 643 (discussing a strategy of "reducing pollution by spreading out discharge sources to take fuller advantage of the assimilative capacity of existing areas of high ambient air and water quality," but rejecting such a strategy because "'[d]ilution is not the solution to pollution"'). *Cf.* Snyder, *supra* note 23, at 891 ("[A] water pollution control program may be very effective at pollution abatement in areas of poor water quality; yet if areas of high water quality become polluted at the same time, the program has only traded one problem for another.").
75. *See, e.g.*, CAA § 172(c), 42 U.S.C. § 7502(c) (2006) (listing requirements for state implementation plans that cover nonattainment areas).
76. *See, e.g.*, *id.* § 7511a (2006) (requirements for ozone nonattainment areas).
77. CWA § 303(d), 33 U.S.C. § 1313(d) (2006).
78. *See* Snyder, *supra* note 23, at 891–92.
79. Stewart, *Quasi-Constitutional Law*, *supra* note 66, at 747.
80. Hines, *supra* note 8, at 654. *See also* Stewart, *Quasi-Constitutional Law*, *supra* note 66, at 747 (noting the usefulness of antidegradation requirements in alleviating the "commons' dilemma" by forcing states "to adopt policies which they would voluntarily select in the absence of transaction costs precluding common agreement").
81. *See* Oren, *Control-Compelling*, *supra* note 65, at 105, 111 (attributing the passage of the PSD program in 1977 to an effort by industrialized states to limit economic growth in the Sunbelt). Distributional considerations may cut against the adoption of an antidegradation policy, too. According to Richard Stewart, a nondegradation policy "would inhibit economic development in areas with considerable poverty and unemployment, while the benefits would accrue in large measure to the wealthy who can afford to visit scenic areas of exceptionally high environmental quality or who are more likely to derive psychic satisfaction from their preservation." Stewart, *Quasi-Constitutional Law*, *supra* note 66, at 750.
82. *Cf.* Bonnie A. Malloy, *Testing Cooperative Federalism: Water Quality Standards Under the Clean Water Act*, 6 Envtl. & Energy L. & Pol'y J. 63, 86 (2011) (noting that "lower standards would be more likely to attract industry").
83. Oren, *Control-Compelling*, *supra* note 65, at 85.
84. CAA § 160(4), 42 U.S.C. § 7470(4) (2006).
85. Arkansas v. Oklahoma, 503 U.S. 91, 95 (1992).
86. *Id.*
87. *Id.* at 97.
88. 40 C.F.R. § 122.4 (2011). This section continues to preclude EPA from issuing a discharge permit "[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States."
89. *Arkansas*, 503 U.S. at 105–07. The Court found it unnecessary to decide whether the CWA *requires* EPA to protect water quality in a downstream state from an upstream discharge in another state. *Id.* at 104.
90. *Id.* at 111–12.
91. *Id.* at 114.

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water quality standard violations, including violations of the antidegradation policy,[92] but in practice the burden of linking an upstream discharge with a downstream water quality violation may be difficult to meet.[93]

5. Balancing Environmental Goals and Economic Growth Opportunities

Antidegradation programs seek to balance the protection of existing clean air and water quality and continued economic growth.[94] A goal of the CAA's PSD program is to "insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources."[95] Under the CWA's policy, degradation of Tier 2 waters is allowed if necessary to accommodate important social and economic development.[96] This approach avoids making existing air or water quality "an absolute minimum."[97] The result is "a flexible, site-specific consideration of the economic justifications and social need for water quality degradation in light of available alternatives and the significance of the predicted degradation."[98]

Antidegradation policies can be a vehicle for promoting efficient resource allocation. Degradation is allowed if the value of the economic development that causes it exceeds the resulting marginal decline in the value of the degraded resource.[99] Antidegradation advocates have even couched these programs as job creators, which create opportunities for new sources by requiring tighter source controls and lower ambient concentrations in clean areas.[100] As some supporters of the CAA's PSD program recognized,[101] an antidegradation program also may serve as a temporary device to postpone exploitation of good environmental quality until the potential for economic growth justifies the resulting degradation.[102]

92. *Id*. at 110.
93. For criticism of the standard of proof (i.e., that an upstream source is causing an actual, detectable violation of another state's water quality standards) endorsed by the Court, see Robert L. Glicksman, *Watching the River Flow: The Prospects for Improved Interstate Water Pollution Control*, 43 Wash. U. J. Urb. & Contemp. L. 119, 160–61 (1993).
94. Hines, *supra* note 8, at 650.
95. CAA § 160(3), 42 U.S.C. § 7470(3) (2006).
96. Kalisek, *supra* note 20, at 12.
97. Hines, *supra* note 8, at 645.
98. Mark C. Van Putten, *The Dilution of the Clean Water Act*, 19 U. Mich. J.L. Reform 863, 899 (1986). EPA's failure to define important economic and social development has given states broad discretion to endorse degradation of Tier 2 waters, as long as existing uses are not prevented or state water quality standards otherwise violated. *See* Adler et al., *supra* note 73, at 202.
99. Hines, *supra* note 8, at 645.
100. Oren, *Control Compelling*, *supra* note 65, at 97.
101. "Representative Waxman, for instance, urged that the program ought to be adopted as a means to control the growth of clean air areas so that there would be room for future industrial growth; this statement perhaps implies a desire to use PSD to keep some clean air for later appropriation." *Id*. at 101.
102. *Id.* This argument for postponing exploitation "draws from the conservationist, rather than the preservationist, roots of the environmental movement," *id.* at 101–02, in that the former supported the management of natural resource use to maximize economic returns over time. *See* Hines, *supra* note 8, at 646 (noting that "the idea of nondegradation seems to be closely related to large principles of conservation"). These conservation principles are similarly expressed in the sustained yield provisions of the federal public land management statutes described in Part III.A, *infra.*

II. Historical Experience With the Clean Water Act's Antidegradation Program

The success of antidegradation programs in preventing deterioration of high-quality water bodies varies widely from state to state.[103] Although the antidegradation policy is intended to protect high-quality waters, it is by no means a precise set of instructions to the states.[104] EPA interprets its role in the enforcement of antidegradation policies as a passive one.[105] It may disapprove and promulgate all or part of an implementation process for antidegradation if, in the judgment of the Administrator, the state's process (or certain provisions thereof) circumvents the intent and purpose of the federal antidegradation policy.[106] EPA rarely does so, however.[107] EPA's proclivity for leaving the policy vague, and for affording broad discretion to the states, has precluded the development of a consistent national antidegradation policy.[108] As a result, critics describe the policy as "at best, obscure," and lacking in substantive content.[109]

This Part reviews the nation's experiences with the designation of high-quality waters and with the subsequent implementation of protective measures for, and permitting decisions in, those waters. It begins by comparing variations in the states' designation criteria and processes. It then critiques the states' implementation of permitting authorities for designated waters, and highlights instances where state implementation has failed to ensure against the degradation of high-quality waters. It concludes with an in-depth assessment of the antidegradation policy's deficiencies.

A. State Designation Variations

The designation process for Tier 1 through 3 waters[110] "varies enormously" from state to state.[111] EPA's antidegradation policy does not provide adequate guidance on how to distin-

103. *See, e.g.*, TetraTech, Inc., Evaluation of Options for Antidegradation Implementation Guidance 20 (2008), *available at* http://dec.alaska.gov/water/wqsar/wqs/pdfs/Antidegradation_tetratech_final.pdf.
104. Harleston, *supra* note 27, at, 52–53 ("In its almost thirty years of existence, few details of implementing antidegradation have been expressed.").
105. Avinash Kar et al., Natural Res. Def. Council, Effective Environmental Compliance and Governance: Perspectives From the Natural Resources Defense Council 9 (2010), *available at* http://docs.nrdc.org/international/files/int_10051901a.pdf.
106. U.S. Envtl. Prot. Agency, *supra* note 39, at § 4.3.
107. *See* Kar et al., *supra* note 105, at 7 (noting that EPA could serve as an important catalyst in defining minimum standards, but that it must work more closely with the states to ensure compliance with the laws).
108. Harleston, *supra* note 27, at 77.
109. Jeffrey M. Gaba, *Generally Illegal: NPDES General Permits Under the Clean Water Act*, 31 Harv. Envtl. L. Rev. 409, 454 (2007) [hereinafter Gaba, *General Permits*]. *See also* Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons From the Clean Air Act*, 23 Harv. Envtl. L. Rev. 203, 292 (1999) ("the current [CWA antidegradation] program . . . is so vague as to defy clear explanation").
110. *See supra* notes 39–45 and accompanying text for a description of the three-tiered structure of the CWA's antidegradation program.
111. Merritt Frey, River Network, Implementing the Clean Water Act in the Intermountain West: An Overview 45 (2009), *available at* http://www.rivernetwork.org/cwwpolicyanalysis. *See* Adler, *supra* note 109, at 213 (noting wide variations in designation criteria and processes).

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guish between Tier 1 and Tier 2 waters.[112] Likewise, EPA's definition of Tier 3 (Outstanding National Resource Waters) is unclear.[113] Moreover, some states' regulations provide no information whatsoever on how a water body might be nominated or how a designation decision might be made, leaving protection of the highest quality waters at risk.[114] "Designation policies in many states are so vague as to be hard for a concerned citizen or watershed group to use . . . or even to understand how they could use them."[115] As a result, courts tend to defer to the agencies' designation decisions, unless there is no evidence whatsoever to support them.[116]

Criteria and processes for distinguishing between Tier 1 and Tier 2 waters are especially opaque. In *Kentucky Waterways Alliance v. Johnson*, the Sixth Circuit addressed a series of challenges to Kentucky's antidegradation policy.[117] The court deferred to EPA's view that its own regulations permitted either a pollutant-by-pollutant or water body-by-water body approach to determining which waters merit Tier 2 protection.[118] It also allowed automatic exclusion of impaired waters from Tier 2,[119] and found that a state's program complies with the antidegradation policy as long as all waters whose quality exceeds fishable/swimmable water quality are afforded Tier 2 protection.[120] According to the court, neither the CWA nor EPA regulations require that a minimum percentage of a state's waters be afforded Tier 2 protection.[121]

Occasionally, a state's explanation for a designation is so inadequate that judicial relief is forthcoming. In West Virginia, for example, a district court invalidated EPA's approval of the state's antidegradation program for deficiencies in both designation and implementation.[122] With regard to designation, the court rejected the state's classification of segments of the Kanawha and Monongahela Rivers as Tier 1 waters.[123] The absence of evidence about the water quality of those rivers failed to support denying them the more stringent protection of Tier 2.[124] The court also invalidated EPA's approval of a provision that failed to require Tier 2 protection in all cases where the water segment supported minimum fishable/swimmable uses and had assimilative capacity remaining for some parameters.[125]

With respect to the most protective category—Tier 3 ONRWs—some states have no regulations regarding processes or criteria for making designation decisions.[126] Perhaps not surprisingly, then, some states have no ONRWs within their boundaries.[127] EPA regulations include, as examples of ONRWs, "waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance."[128] These waters are not covered, however, unless a state takes affirmative steps to designate them, and states sometimes refuse to do so because ONRWs are afforded the highest level of protection.[129] Absent explicit state designations, courts have refused to recognize ONRWs at the behest of citizens' groups.[130]

A few states do in fact use the ONRW designation to protect wilderness waters and critical habitat, in addition to parks, refuges, and other unique water bodies.[131] Montana automatically designates all "surface waters located wholly within the boundaries of designated national parks or wilderness areas."[132] Florida's ONRW program includes parks, refuges, wilderness areas, memorials, and waters of special recreational or ecological significance.[133] Colorado includes water bodies that constitute "a significant attribute" of wilderness areas.[134] Washington has imposed a higher burden of proving eligibility for Tier 3 status, requiring water bodies within wilderness areas to be "relatively pristine" or possess exceptional water quality to be eligible as ONRWs.[135]

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112. 40 C.F.R. § 131.12(a) (2011); Gaba, *General Permits*, *supra* note 109, at 454. *See* Gaba, *New Growth*, *supra* note 15, at 675 ("Unfortunately, the difference between Tier 1 and Tier 2 waters may, in many cases, be more metaphysical than biological."); Kalisek, *supra* note 20, at 11 (stating that the states have struggled with how to identify Tier 2 high-quality waters).
113. 40 C.F.R. § 131.12(a)(3). *See* John A. Chilson, *Keeping Clean Waters Clean: Making the Clean Water Act's Antidegradation Policy Work*, 32 U. Mich. J.L. Reform 545, 553–55 (1999).
114. Frey, *supra* note 111, at 51. *See, e.g.*, Am. Littoral Soc'y v. U.S. Envtl. Prot. Agency, 199 F. Supp. 2d 217, 238 (D.N.J. 2002) (rejecting challenge to state's failure to designate any waters to be protected by antidegradation policy because the plaintiffs failed to identify any waters requiring protection).
115. Frey, *supra* note 111, at 50.
116. *See, e.g.*, *In re* Town of Sherburne, 581 A.2d 274, 275 (1990) (upholding downgrading of waters to accommodate proposed sewage disposal facility).
117. Ky. Waterways Alliance v. Johnson, 540 F.3d 466, 472–73 (6th Cir. 2008).
118. *Id.* at 475–77.
119. *Id.* at 477–81.
120. *Id.* at 481.
121. *Id.*
122. Ohio Valley Envtl. Coal. v. Horinko, 279 F. Supp. 2d 732, 737 (S.D. W. Va. 2003).
123. *Id.*
124. *Id.* The court ruled that EPA regulations permit classification of waters as Tier 1 or Tier 2 based on a water body-by-water body approach, without having to make classifications for each pollutant. *Id.* at 747–48. But the record contained no evidence to justify classifying the rivers as Tier 1, other than their appearance on the list of impaired waters. *Id.* at 750.
125. *Id.* at 766.
126. Frey, *supra* note 111, at 51.
127. Judith M. Brawer, *Antidegradation Policy and Outstanding National Resource Waters in the Northern Rocky Mountain States*, 20 Pub. Land & Resources L. Rev. 13, 21 (1999). *See also* Water Quality Standards Regulation, 63 Fed. Reg. 36742, 36786 (July 7, 1998) (characterizing the designation of ONRWs as limited, although some states have designated a high percentage of their waters as ONRWs).
128. 40 C.F.R. § 131.12(a)(3) (2011). *See generally* Michael C. Blumm & Thea Schwartz, *Mono Lake and the Evolving Public Trust in Western Water*, 37 Ariz. L. Rev. 701, 716–20 (1995) (describing the implications of ONRW designation on diversions of water from tributaries to Mono Lake for use in Los Angeles).
129. Bryan Bird & Rachel King, WildEarth Guardians, Clean Waters, Wild Forests: A Citizen Manual for Designating Outstanding Waters in the Wild Forests of the Western United States 8 (2011) (states are given discretion as to the actual designation of ONRWs).
130. *See, e.g.*, Save the Lake v. Schregardus, 752 N.E.2d 295, 303 (Ohio Ct. App. 2001) (refusing to treat waters within a state park as automatically entitled to ONRW status).
131. *See* C. Mark Hersh, *The Clean Water Act's Antidegradation Policy and Its Role in Watershed Protection in Washington State*, 15 Hastings W.-Nw. J. Envtl. L. & Pol'y 217, 222–29 (2009) (advocating use of antidegradation policy as an underutilized habitat protection tool in Washington state); Brawer, *supra* note 127, at 20–27 (discussing designation of ONRWs in Montana, Idaho, and Wyoming).
132. Mont. Admin. R. § 17.30.617(1) (2006).
133. Fla. Admin. Code Ann. R. § 62-302.700(2) (2006).
134. Colo. Code Regs. § 1002-31:31.8(2)(a)(ii)(A) (2007). *See also* Colo. Code Regs. § 1002-31:31.28(C)(3) (explaining that ONRW designations apply in wilderness areas despite the fact the wilderness areas already have other types of protections in place; to conclude otherwise "would prevent application of the outstanding waters designation to waters that may be among those most deserving of protection").
135. Wash. Admin. Code § 173-201A-330(1)(a) (2003).

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New Mexico's experience might serve as an example of how efforts to designate and protect ONRWs can work fairly well. In 2010, the New Mexico Water Quality Control Commission adopted an across-the-board rule designating all perennial surface waters in Forest Service wilderness areas as ONRWs.[136] Prior to the rule, there were only two ONRWs in New Mexico—the Rio Santa Barbara in the Pecos Wilderness and the waters of the Valle Vidal in the Carson National Forest.[137] The new designation covers 700 miles of 195 perennial rivers and streams, 29 lakes, and 1,405 wetlands in 12 wilderness areas.[138] According to the New Mexico Environment Department, "[t]hese waters represent the State's most valuable headwater streams. Protection of these headwaters will help maintain a clean water supply for uses in Wilderness and for downstream uses by municipalities, agriculture, and recreational interests, and will help maintain healthy ecosystems, preserve habitat, and protect vulnerable and endangered species."[139] To protect ONRWs, the new rule prohibits new or increased point source discharges that would adversely impact water quality and requires best management practices ("BMP") for nonpoint sources.[140] It provides that, except for pre-existing land-use activities that comply with BMPs, water quality cannot be degraded in ONRWs.[141]

Ironically, some of the newly designated ONRWs are on the section 303(d) "impaired waters" list.[142] The ONRW designation may stimulate restoration efforts on these waters. According to a representative of the Coalition for the Valle Vidal, the Valle Vidal illustrates how some ONRWs receive a fair amount of attention for restoration work.[143] A long history of grazing, mining, and logging left some of the Valle Vidal tributaries in a "highly degraded state."[144] Ongoing restoration efforts include relatively inexpensive, yet effective, low-tech restoration projects like fencing, erosion control structures made of rock and vegetation, and road drainage devices that direct runoff into vegetative buffer zones.[145]

Environmental groups applauded the state's efforts to protect ONRWs,[146] but the New Mexico Cattle Growers Association petitioned to set aside the new rule[147] and urged the Commission to designate smaller watersheds on a case-by-case basis rather than in one blanket rule.[148] The court ultimately dismissed the Cattlegrowers' challenge on jurisdictional grounds, leaving the ONRW designation intact, and the Commission is going forward with the implementation of the ONRW rule.[149]

B. State Implementation Variations

EPA regulations require that state water quality standards "identify the methods for implementing" the antidegradation policy.[150] In some instances, litigants have leveled facial attacks on entire state programs or significant components of those programs; in others, they have identified more discrete actions, such as the issuance of permits, alleged to be in violation of the state's antidegradation program.[151] The judicial treatment of these challenges has been inconsistent, but one theme emerges: a state antidegradation program that is little more than an empty shell is vulnerable to attack.

1. Programmatic Attacks

In *Kentucky Waterways Alliance*, the Sixth Circuit took issue with Kentucky's decision to exempt five categories of discharges from the requirement that new or expanded discharges into high-quality waters pass Tier 2 review.[152] The plaintiffs argued that the exemptions "eviscerate[d] Ken-

136. Standards for Interstate and Intrastate Surface Waters, N.M. Water Quality Control Comm'n, 20.6.4.9.D(3) NMAC (2009); Standards for Interstate and Intrastate Surface Waters, N.M. Water Quality Control Comm'n, 20.6.4.8.A(3)-(4) NMAC (2011); *see* Press Release, Office of the Sec'y, N.M. Env't Dep't, Water Quality Control Commission Adopts Petition that Protects Headwater Streams in Wilderness Areas of New Mexico (Dec. 1, 2010), *available at* http://www.nmenv.state.nm.us/OOTS/documents/PR-ONRWPasses-Final-12-1-10.pdf; Standards for Interstate and Intrastate Surface Waters, N.M. Water Quality Control Comm'n, 20.6.4.9.B, D NMAC (2011) (providing criteria for ONRW designation). Two other states in the intermountain west—Utah and Wyoming—have designated all waters within large geographic areas such as national forests or wilderness areas as ONRWs. Frey, *supra* note 111, at 50.

137. E-mail from Erik Schlenker-Goodrich, Interim Exec. Dir., W. Envtl. Law Ctr., to Sandra Zellmer (Jan. 19, 2012) (on file with authors).

138. Order and Statement of Reasons, N.M. Water Quality Control Comm'n, WQCC 10-01(R) 23 (Dec. 15, 2010), *available at* ftp://ftp.nmenv.state.nm.us/www/HearingOfficer/ONRW/WQCCOrder+SOR20.6.4NMAC.pdf.

139. Office of the Sec'y, *supra* note 136, at 2.

140. N.M. Water Quality Control Comm'n, Antidegradation Policy Implementation Procedure 17 (2010), *available at* ftp://ftp.nmenv.state.nm.us/www/swqb/CPP/2010/CPP-AppendixA.pdf (point sources); N.M. Water Quality Control Comm'n, Guidance for Nonpoint Source Discharges in Outstanding National Resource Waters G-1 (2009) [hereinafter Guidance for Nonpoint Source Discharges], *available at* ftp://ftp.nmenv.state.nm.us/www/swqb/WPS/NPSPlan/2009NPSPlan-AppendixG11-30-10.pdf (nonpoint source discharges).

141. Guidance for Nonpoint Source Discharges, *supra* note 140, at G-4.

142. E-mail from Schlenker-Goodrich, *supra* note 137.

143. *Id.*

144. Comanche Creek, http://www.comanchecreek.org/ (last visited Dec. 18, 2012).

145. *Restoration Practices,* Comanche Creek, http://comanchecreek.org/Restoration_Practices/index.html (last visited Dec. 18, 2012). Restoration goals are "to meet current water quality standards; restore hydrologic function to the creek and it[s] tributaries; and maximize habitat for the Rio Grande cutthroat trout." Comanche Creek, *supra* note 144.

146. Press Release, Susan Montoya Bryan, Associated Press, NM Regulators Approve Outstanding Waters, (Dec. 1 2010), *available at* ftp://ftp.nmenv.state.nm.us/www/swqb/News/AP12-01-2010Article.pdf. *See generally Overview of ONRW Protections and History in New Mexico*, Amigos Bravos, http://amigosbravos.org/onrw.php (last visited Dec. 18, 2012).

147. Brief for Appellant, N.M. Cattle Growers' Ass'n v. Water Quality Control Comm'n, Ct. App. No. 31,191 (N.M. Ct. App. Aug. 22, 2011); *see* Staci Matlock, *New Rule Under Fire From N.M. Cattle Growers Association*, Santa Fe New Mexican (Jan. 10, 2011), http://www.santafenewmexican.com/localnews/outstanding-waters-New-rule-under-fire-from-cattle-growers.

148. *See* Brief for Appellant at 20, *N. M. Cattle Growers' Ass'n,* Ct. App. No. 31,191.

149. *See* N.M. Cattle Growers' Ass'n v. N.M. Water Quality Comm'n, No. 31,191 (N.M. Ct. App. Dec. 26, 2012). *See also Water Quality Standards: Outstanding National Resource Waters*, Surface Water Quality Bureau, N.M. Env't Dep't, http://www.nmenv.state.nm.us/swqb/ONRW/ (last updated Dec. 18, 2012).

150. 40 C.F.R. § 131.12(a) (2012).

151. *See infra* text accompanying notes 152–74 (programmatic challenges); *infra* text accompanying notes 175–203 (challenges to discrete actions).

152. Ky. Waterways Alliance v. Johnson, 540 F.3d 466, 491 (6th Cir. 2008). The five categories included any expanded discharge under a renewed or modified state permit, so long as the expansion did not increase pollutant loading by twenty percent or more. *Id.*; *see also supra* text accompanying notes 117–21 (describing court's deference to EPA's approval of Kentucky's exclusion of certain waters from Tier 2 designation).

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tucky's Tier [2] review process, allowing significant degradations in water quality without demonstrated necessity."[153] The court reasoned that because EPA's antidegradation regulations protected assimilative capacity, EPA's task was to focus on how much assimilative capacity would be lost under the exemptions, and, in particular, whether that loss would be significant or merely de minimis.[154] Instead of assessing the exemptions' cumulative effects, EPA measured Kentucky's compliance by assessing whether each individual exemption resulted in "significant" or "insignificant" degradation of assimilative capacity.[155] The court, therefore, lacked an adequate factual record for determining whether the exemptions together permitted significant degradation, and it remanded to EPA for further analysis.[156]

Similarly, the West Virginia district court chastised EPA for ignoring the plain meaning of the state regulations in approving provisions allowing new or expanded discharges from wastewater treatment plants to evade Tier 2 review if the discharge resulted in a net decrease in the overall pollutant loading.[157] According to the court, EPA's approval in effect rewrote the provision to apply only when there is a net decrease in the pollutant loading for each pollutant parameter.[158]

EPA's lack of vigilance in overseeing state compliance with the antidegradation policy was also reflected in its approval of an egregiously deficient implementation plan in Oregon.[159] The plan contained only one sentence providing that the state's entire set of water quality standards was "intended to implement the Antidegradation Policy."[160] The court held that EPA erred in approving a policy that failed to identify "even a semblance of an implementation plan," in clear violation of its own regulation.[161] Subsequently, when EPA approved Oregon's revised implementation plan, its decision was remanded once again because the plan failed to specify a method to identify and protect existing uses.[162] The court rejected EPA's argument that the CWA does not specify a minimum method for implementing antidegradation policies but simply requires that states "identify methods for their implementation."[163] It concluded that EPA must review the state's entire implementation plan to ensure that it describes all of the required elements and does not circumvent the purpose of the antidegradation policy.[164] On the other hand, the court deferred to EPA's determination that a provision that applied to "recognized beneficial uses" protected all "existing uses" from becoming "unacceptably threatened or impaired."[165] It also upheld EPA's interpretation of Oregon's use of the term "unacceptably" as allowing only de minimis threats or impairments to existing uses, but noted that "Oregon's program must, at a minimum, not allow activities that could partially or completely eliminate any existing uses."[166]

Some of the most significant programmatic challenges have involved nonpoint source pollution. Judicial reactions to these challenges have been mixed. When Montana's legislature "attempted to undermine the effectiveness of the ONRW designation by exempting activities identified as 'nonsignificant' from antidegradation review,"[167] EPA directed the state to revise its program to protect the water quality of ONRWs from "even non-significant, permanent changes in water quality."[168] EPA approved Montana's subsequent proposal, which extended the antidegradation program to all point sources, but continued to exempt nonpoint sources (and mixing zones) from its requirements.[169] In particular, Montana's new provision exempted nonpoint sources from the antidegradation requirements for Tier 2 waters "when reasonable land, soil, and water conservation practices [were] applied and existing and anticipated beneficial uses [would] be fully protected."[170] In *American Wildlands v. Browner*, the Tenth Circuit deferred to EPA's approval based

153. *Ky. Waterways Alliance*, 540 F.3d at 492.

154. *Id.* "[A]ssimilative capacity is a measurement of the amount by which . . . quality exceeds levels necessary to support fish, wildlife, and recreation." *Id.* at 484. According to EPA, "the central purpose of the federal Tier II antidegradation regulations is to protect a water body's assimilative capacity, which is 'the difference between the applicable water quality criterion for a pollutant parameter and the ambient water quality for that parameter when it is better than the criterion.'" *Id.* (citing Memorandum from Ephraim S. King, Dir., Office of Sci. & Tech., U.S. Envtl. Prot. Agency, to Water Mgmt. Div. Dirs. (Aug. 10, 2005)); Water Quality Standards Regulation, 63 Fed. Reg. at 36793.

155. *Ky. Waterways Alliance*, 540 F.3d at 492.

156. *Id.* at 492–93. *Cf.* Ohio Valley Envtl. Coal. v. Horinko, 279 F. Supp. 2d 732, 770–73 (S.D. W. Va. 2003) (invalidating EPA's approval of a provision deeming degradation to be significant if the proposed activity, together with all other activities allowed after the baseline water quality is established, resulted in a reduction of a water segment's available assimilative capacity of twenty percent or more for parameters of concern because EPA failed to explain why a twenty percent reduction in assimilative capacity should be considered insignificant); Rivers Unlimited, Inc. v. Schregardus, 685 N.E.2d 603 (Ohio C.P. 1997) (holding that state law allowing agency to approve lowering of stream's water quality by as much as eighty percent of its assimilative capacity without antidegradation review was inconsistent with the CWA).

157. *Ohio Valley Envtl. Coal.*, 279 F. Supp. 2d at 737–38, 752–57. *See supra* note 124 (describing court's invalidation of Tier 1 designations).

158. *Ohio Valley Envtl. Coal.*, 279 F. Supp. 2d at 737–38, 752–57. The court upheld EPA's approval of other aspects of the program. It held that EPA properly approved the state's partial exemption of existing permitted uses from Tier 2 review, a provision allowing for a de minimis ten percent reduction in the available assimilative capacity of Tier 2 waters before Tier 2 review is required, and provisions allowing water quality trades without triggering antidegradation review. *Id.* at 751–52, 767–70, 774–76.

159. *See* Nw. Envtl. Advocates v. U.S. Envtl. Prot. Agency, 268 F. Supp. 2d 1255 (D. Or. 2003).

160. *Id.* at 1264–65 (quoting Or. Admin. R. 340–041–0026(1)(a) (2012)).

161. *Id.* at 1265 (citing 40 C.F.R. § 131.12(a) (2011)). *See also* CORALations v. U.S. Envtl. Prot. Agency, 477 F. Supp. 2d 413, 418 (D.P.R. 2007) (overturning EPA's approval of water quality standards that lacked any methods or procedures to apply Puerto Rico's antidegradation policy to wetlands).

162. Nw. Envtl. Advocates v. U.S. Envtl. Prot. Agency, No. 3:05–cv–01876–AC, 2012 WL 653757 (D. Or. Feb. 28, 2012).

163. *Id.* at *19.

164. *Id.* EPA argued that, although states are required to identify methods for implementing their antidegradation policy, those methods need not be contained in the state's regulation.

165. *Id.* at *18 (citing *PUD No. 1 of Jefferson Cnty.*, 511 U.S. at 705). EPA interpreted this provision as disallowing "both unacceptable threats to uses and actual use impairment." *Id.*

166. *Id.* at *17–18.

167. Brawer, *supra* note 127, at 23 (citing Mont. Code Ann. § 75-5-317 (1997)).

168. *Id.* at 23–24, citing Region VIII EPA letter to Gov. Marc Racicot 3–5 (Dec. 1998)).

169. American Wildlands v. Browner (*American Wildlands I*), 94 F. Supp. 2d 1150, 1150 (D. Colo. 2000), *aff'd*, 260 F.3d 1192 (10th Cir. 2001).

170. American Wildlands v. Browner (*American Wildlands II*), 260 F.3d 1192, 1195 (10th Cir. 2001) (citing Mont. Code Ann. § 75-5-317(2)(b)). This exemption did not apply to ONRWs. *See American Wildlands I*, 94 F. Supp. at 1159 n.5.

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on its belief that "the Act nowhere gives the EPA the authority to regulate nonpoint source discharges."[171]

Conversely, in *Northwest Environmental Advocates v. EPA*, the court was unmoved by EPA's assertion that it lacked authority to "review and potentially disapprove Oregon's nonpoint source provisions as a part of its water quality standards review."[172] The court declined to follow *American Wildlands,* explaining that because "many temperature impaired waters in Oregon are impaired in whole or in part by nonpoint sources of pollution, the challenged provisions could present a considerable obstacle to the attainment of water quality standards when, by law, the sources of pollution are deemed to be in compliance with water quality standards."[173] The court noted that one function of water quality standards is to achieve federally-approved water quality goals through both state controls and "federal strategies other than point-source technology-based limitations," and that "[t]his purpose pertains to waters impaired by both point and nonpoint sources of pollution."[174]

2. As Applied Challenges to Tier 1 and 2 Waters Issues

Other judicial challenges have focused on more discrete aspects of state antidegradation provisions applicable to one or more of the three tiers of waters. In some of these "as applied" cases, judicial interpretation has watered down antidegradation requirements, such as in a pair of North Dakota cases involving the approval of permits allowing phosphorous discharges into high-quality waters because of the purported economic and social importance of the discharging activities.[175]

An Alabama court's rejection of an environmental group's attack on a state antidegradation regulation highlights the difficulties of challenging findings that economic necessity justifies degradation.[176] The court upheld a regulation allowing a permit applicant to meet its obligation to provide "alternatives" to discharges into Tier 2 waters simply by showing that the project's costs did not exceed a threshold for annualized costs.[177] The court characterized the rule as "a compromise between environmental and broader economic concerns [that] the judiciary should be loath to disturb."[178] The court reasoned that the state permitting agency needed the discretion to decide whether, at some level, the needs of the state's people would be better served by placing upper limits on the costs of industrial plants than by "requiring massive and inefficient expenditures in order to achieve marginal improvements in water quality."[179]

In a few cases, the antidegradation policy has constrained the issuance of discharge permits.[180] Most commonly, courts have rejected permits for discharges into Tier 2 waters because of the absence of any findings of necessary economic or social development.[181] Permitting decisions that blatantly ignore the need to justify degradation of Tier 2 waters, then, are likely to be more vulnerable than decisions purporting to rest on a finding of necessity.

The courts have also served as a check on agency efforts to exempt projects from antidegradation protections. In one case, for example, a Montana agency declined to apply the state's antidegradation policy to discharges from a mine adit based on a regulation exempting "nonsignificant" discharges into Tier 2 waters.[182] Had the policy applied, the discharges would have been subject to significantly more stringent controls, and the process for reviewing the mine's permit application would have entailed more

171. *American Wildlands II*, 260 F.3d at 1198. *See also* Defenders of Wildlife v. U.S. Envtl. Prot. Agency, 415 F.3d 1121, 1124 (10th Cir. 2005) ("the CWA does not require states to take regulatory action to limit the amount of nonpoint water pollution introduced into its waterways"). *But cf.* Montana Envtl. Info. Ctr. v. Dep't of Envtl. Quality, 988 P.2d 1236 (Mont. 1999) (finding that a state statute exempting a gold mine's discharges of arsenic-laced water into rivers that provided habitat for endangered species from the antidegradation review process violated the state's constitutional provision guaranteeing its citizens a right to a clean and healthy environment).

172. Northwest Envtl. Advocates v. U.S. Envtl. Prot. Agency, No. 3:05–cv–01876–AC, 2012 WL 653757, at *17–18 (D. Or. Feb. 28, 2012). Plaintiffs challenged several regulations that essentially exempted various nonpoint sources of heat pollution from complying with water quality standards from antidegradation review "so long as they do not increase in frequency, intensity, duration, or geographical extent." *Id.* at *11.

173. *Id.* at *13.

174. *Id.* at *17 (citing Pronsolino v. Nastri*,* 291 F.3d 1123, 1130 (9th Cir. 2002)). *Pronsolino* paved the way for this decision by finding that EPA's TMDL regulations "focused on the attainment of water quality standards *regardless of the source of the pollution*." *Id.* at *9 (emphasis added). Disputes have also arisen over the applicability of state antidegradation programs to other types of activities. *See, e.g.*, W. Va. Coal Ass'n v. Reilly, 728 F. Supp. 2d 1276 (S.D. W. Va. 1989), *aff'd*, 932 F.3d 964 (Table), 33 Env't Rep. Cas. (BNA) No. 1353 (4th Cir. 1991) (upholding EPA's authority to object to state's issuance of permit to coal mining operation that would involve use of streams for waste assimilation and treatment, in violation of the antidegradation policy).

175. *See* People to Save the Sheyenne River, Inc. v. N.D. Dep't of Health, 697 N.W.2d 319, 330–31(N.D. 2005) (upholding outlet permit for discharge into category 1 lake because the addition of phosphorus would not alter the beneficial use of waters, the agency adequately considered other, less degrading alternatives, and the agency determined that the outlet was part of a project designed to accommodate social and economic factors in the affected regions); People to Save Sheyenne River, Inc. v. N.D. Dep't of Health, 744 N.W.2d 748 (N.D. 2008) (upholding modification of permit for lake outlet because it would not cause concentration of any parameter of concern to increase by more than fifteen percent); *see also* Community Ass'n for Restoration of the Env't v. Wash. Dep't of Ecology, 205 P.3d 950 (Wash. Ct. App. 2009) (upholding general permit for confined animal feeding operations that required soil but not groundwater monitoring).

176. Ala. Dep't of Envtl. Mgmt. v. Legal Envtl. Assistance Found., 922 So. 2d 101 (Ala. Civ. App. 2005).

177. *Id.* at 108.

178. *Id.* at 114.

179. *Id.* at 113.

180. *See, e.g.*, Hughey v. Gwinnett Cnty., 609 S.E.2d 324 (Ga. 2004) (invalidating issuance of a permit to a wastewater treatment plant because, even though the administrative law judge appropriately found the requisite necessity, the permit failed to meet the state antidegradation policy's requirement that the county use the best practicable treatment technology).

181. *See, e.g.*, Ill. EPA v. Ill. Pollution Control Bd., 896 N.E. 2d 479 (Ill. App. Ct. 2008) (finding that the permitting agency's record lacked data showing that the increased discharge was unavoidable or necessary, did not discuss other feasible alternatives that might have negated the necessity of the increased discharge, and did not contain information regarding the possibility of other methods to eliminate or reduce phosphorus and/or nitrogen before discharging wastewater into stream); *see also* Columbus & Franklin Cnty. Metro. Park Dist. v. Shank, 600 N.E.2d 1042, 1057–59 (Ohio 1992) (concluding that a state agency acted arbitrarily in deciding that degradation of water quality in a creek was "necessary to accommodate important economic or social development").

182. Clark Fork Coal. v. Mont. Dep't of Envtl. Qual., 197 P.3d 482, 493 (Mont. 2008).

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public scrutiny.[183] The Montana Supreme Court held that the agency's unsupported statement that a perpetual discharge from the adit would always be sufficiently treated did not justify its determination that the discharge would be "nonsignificant."[184]

The Montana Supreme Court upheld the state agency's identification of two parameters for the purpose of making "nonsignificance" determinations, triggering the application of antidegradation review to the discharge of coalbed methane produced waters.[185] A federal district court, however, subsequently remanded EPA's approval of Montana's rules adopting numerical standards for the two parameters because EPA failed to consider industry's concerns about the alleged lack of scientific support for the standards.[186] In critiquing EPA's explanation that the two parameters "may" be harmful, the court spuriously concluded, without any supporting rationale or citations, that "[a]pproving a state standard on the basis that a parameter may be harmful is certainly not what the Clean Water Act envisioned."[187] The court failed to recognize that the CWA reflects Congress's intent to protect water quality against threats of uncertain magnitude, requiring, for example, that total maximum daily loads include "a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."[188]

These cases indicate that, once a properly adopted state antidegradation program is in place, states have considerable discretion to accommodate discharges into Tier 1 and 2 waters to promote economic and social goals, provided they comply with regulatory procedures and supply some evidentiary support for their substantive determinations.

3. As Applied Challenges to Tier 3 Waters Issues

Courts have been somewhat less deferential in reviewing permitting decisions that impact Tier 3 waters (ONRWs), at least when it comes to new or expanded uses with clear impacts on water quality.[189] In *League to Save Lake Tahoe v. Tahoe Regional Planning Agency*, the court held that the Tahoe Regional Planning Agency arbitrarily allowed additional mooring buoys, piers, and other forms of development in its shoreline ordinances.[190] The ordinances would have allowed increased motor boating, which in turn would cause increased pollutant discharges and runoff into Lake Tahoe, which California had classified as an ONRW.[191] Although the Agency proposed mitigation measures, including "no wake" zones, speed limits, and user fees, the court found that its determination that there would be no significant water quality impacts was arbitrary.[192]

Along the same lines, a Minnesota court set aside a permit allowing a city to triple the capacity of a wastewater treatment plant and discharge nearly two million gallons of waste each day into an ONRW river.[193] The state's antidegradation rules prohibited any new or expanded discharges into an ONRW unless there was no prudent and feasible alternative, and then only "to the extent necessary to preserve the existing high quality" of the receiving water.[194] The court held that the state permitting agency failed to provide substantial evidence that the alternative of downsizing the treatment plant and using decentralized treatment was not feasible.[195] The court also held that the permitting agency erroneously restricted the discharge only to prevent degradation below ordinary water quality standards rather than to protect the existing high quality of the water.[196] Finally, by failing to define the baseline existing quality of the water, the permitting agency could not evaluate whether the proposed discharge would preserve existing high quality.[197]

In a subsequent case, however, the Minnesota court rejected a challenge to a permit alleged to be in violation of Minnesota's antidegradation rules.[198] An environmental group claimed that the state agency failed to consider the impact of the introduction of new invasive species through ballast water discharges into Lake Superior.[199] The court deferred to the agency's technical expertise that discharges need only be restricted "to the extent necessary to preserve the existing high [water] quality."[200] Although analysis of the impact of new invasive species on the lake's quality might have been prudent, the agency's failure to address the risks associated with species that had already or might in the future arrive as a result of ballast water discharges was not arbitrary where the Lake had been "receiving ballast-water pollutants without restriction for as long as commercial vessels have operated on Lake Superior."[201] Similarly, in *Port of Seattle v.*

183. *Id.* at 489.
184. *Id.* at 493. *See also* Northern Cheyenne Tribe v. Mont. Dep't of Envtl. Quality, 234 P.3d 51, 58 (Mont. 2010) (invalidating permits to coalbed methane production operation that authorized discharge into high-quality waters of millions of pounds of sodium each year, even though high salinity levels already had impaired the river).
185. Pennaco Energy, Inc. v. Mont. Bd. of Envtl. Review, 199 P.3d 191, 199 (Mont. 2008).
186. Pennaco Energy, Inc. v. U.S. Envtl. Prot. Agency, 692 F. Supp. 2d 1297 (D. Wyo. 2009).
187. *Id.* at 1314.
188. CWA § 303(d)(1)(C), 33 U.S.C. § 1313(d)(1)(C) (2006).
189. *See* League to Save Lake Tahoe v. Tahoe Reg'l Planning Agency, 739 F. Supp. 2d 1260, 1268 (E.D. Cal. 2010), *aff'd in part, vacated in part on other grounds, and remanded,* 469 F. App'x. 621 (9th Cir. 2012).
190. *Id.* at 1266, 1268.
191. *Id.* at 1291–92.
192. *Id.* at 1268.
193. Minn. Ctr. for Envtl. Advocacy v. C'mmr of Minn. Pollution Control Agency, 696 N.W.2d 95, 108 (Minn. Ct. App. 2005).
194. *Id.* at 101.
195. *Id.* at 105. *Cf.* Minn. Ctr. for Envtl. Advocacy v. Minn. Pollution Control Agency, 660 N.W.2d 427 (Minn. Ct. App. 2003) (invalidating general permit for stormwater discharges as violation of antidegradation rules because the state agency failed to consider whether discharges were expanded).
196. *Minn. Ctr. for Envtl. Advocacy*, 696 N.W.2d at 107.
197. *Id.* at 108.
198. *In re* Request for Issuance of the SDS General Permit MNG300000 for Ballast Water Discharges, 769 N.W.2d 312, 315 (Minn. Ct. App. 2009).
199. *Id.*
200. *Id.* at 321.
201. *Id.* at 322. *See, e.g.*, *In re* La. Dep't of Envtl, Quality Permitting Decision: TimberBranch II Sewage Treatment Plan, No. 2010 CA 1236, 2011 WL 1225985 (La. App. 1 Cir. 2011) (affirming agency's decision that discharges of treated sewage would not degrade water quality in ONRW tributary); *In re* Freshwater Wetlands Prot. Act Rules, 180 N.J. 415 (2004) (affirming New Jersey's authorization of cranberry growing operations in the ONRWs of the Pinelands National Reserves).

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PCHB, a Washington court affirmed the agency's conclusion that an airport runway project would satisfy the state's antidegradation policy despite potential impacts to stream flows in class AA waters, the equivalent of ONRWs.[202] It seemed to take comfort in the fact that under the state's policy, the developer must offset the impacts of the project, even though it need not restore the AA waters to pristine condition.[203]

C. *Antidegradation Policy Deficiencies*

The cases described above demonstrate that the CWA's antidegradation policy is neither fulfilling its potential for identifying and protecting high-quality waters, nor meeting the five goals delineated above in Part I. These deficiencies fall into several categories: (1) failure to ensure that high-quality waters receive proper designation; (2) failure to define "degradation" and to identify appropriate triggers for preventing it in the face of "important" economic considerations; and (3) failure to regulate all significant sources of degradation. A fourth defect—the failure to detect inadequate antidegradation plans and follow through with appropriate enforcement—is revealed by on-the-ground implementation issues arising outside of the litigation context. This part explores each of these deficiencies, while Part IV sets forth proposed reforms.

1. Designation Inconsistencies

EPA's antidegradation policy does not provide adequate guidance on how to distinguish Tier 1 from Tier 2 waters.[204] EPA allows states to take either a pollutant-by-pollutant or water body-by-water body approach, with few substantive parameters. Likewise, EPA's definition of Tier 3 is illustrative rather than prescriptive, and its approach to state-by-state designation is wholly discretionary.[205] Accordingly, some state regulations provide no procedural or substantive specifications whatsoever for designation decisions, leaving many high-quality waters unprotected beyond the lowest common denominator—Tier 1.

2. What Is "Degradation" and When Is It Allowed?

In addition to the designation vagaries described above, one key question is how to define "degradation." EPA's regulations utterly fail to recognize the relevance of that question.[206] EPA apparently allows states to limit Tier 2 protections to activities that result in "significant" degradation of water quality, invoking an inherent authority to avoid regulating de minimis environmental threats.[207] State definitions of the point at which impairment triggers antidegradation review are inconsistent.[208] Moreover, as the Sixth Circuit's decision in *Kentucky Waterways Alliance* indicates,[209] the antidegradation policy fails to protect against the cumulative effects of multiple discharges that impair existing water quality.[210]

A related flaw is the failure to describe just how "necessary" and "important" economic or social development must be to allow degradation of Tier 2 high-quality waters.[211] According to EPA, the phrase seeks to convey "a general concept regarding what level of social and economic development could be used to justify a change in high-quality waters. Any more exact meaning will evolve thorough case-by-case application . . ."[212] The burden of demonstrating economic importance is supposed to "be very high."[213] State regulations differ markedly in how they apply this requirement, however.[214] Absent constraints, the exception threatens to swallow the antidegradation rule.[215]

3. What Pollution Sources Are Regulated?

In addition to the inconsistencies in defining "degradation" and "important" development, troublesome gaps have developed through the exclusion of certain pollution sources. In the intermountain west, for example, "the region's antidegradation policies are riddled with exemptions. The most common exemption is for existing sources—all eight states 'grandfather' existing sources if they are not expanding their discharges."[216] Only a few states in the region—Arizona, Wyoming, and New Mexico—appear to meet EPA's requirement that new and expanded discharges in tributaries of ONRWs be limited to those that will not degrade water quality.[217] Exceptions for nonpoint sources—existing or new—are equally widespread. Although a few states—

202. Port of Seattle v. Pollution Control Hearings Bd., 90 P.3d 659, 681 (Wash. 2004).
203. *Id.*
204. *See supra* note 112 and accompanying text.
205. *See supra* note 113 and accompanying text.
206. Harleston, *supra* note 27, at 57.
207. Gaba, *New Growth*, *supra* note 15, at 677. *See* Ohio Valley Envtl. Coal. v. Horinko, 279 F. Supp.2d 732, 767–68 (S.D. W. Va. 2003); *see also* Kent Modesitt, *Antidegradation: A Lost Cause or the Next Cause?*, 2 U. Denv. Water L. Rev. 189, 217 (1999) (noting that an EPA regional office supported the use of a significance determination).
208. *See* Modesitt, *supra* note 207, at 217 (noting that state approaches vary); Frey, *supra* note 111, at 44 (finding that five of the eight intermountain states "apply some sort of numeric, percent-based measure of 'insignificant' degradation (often called de minimis degradation) that is allowable without review").
209. Ky. Waterways Alliance v. Johnson, 540 F.3d 466, 485 (6th Cir. 2008).
210. *See* Adler, *supra* note 109, at 285.
211. 40 C.F.R. § 131.12(a) (2011).
212. Questions & Answers, *supra* note 26, at 8.
213. Kalisek, *supra* note 20, at 12 (quoting U.S. Envtl. Prot. Agency, *supra* note 39, at § 4.5).
214. Frey, *supra* note 111, at 39–41; Adler et al., *supra* note 73, at 202; Katherine Zogas, *The Clean Water Act's Antidegradation Policy: Has It Been "Dumped"?*, 42 J. Marshall L. Rev. 209, 229–30 (2008); Gaba, *New Growth*, *supra* note 15, at 686.
215. Stitts, *supra* note 19, at 1359. *But cf.* Ala. Dep't of Envtl. Mgmt. v. Legal Envtl. Assistance Found., 922 So. 2d 114–15 (Ala. Civ. App. 2005) (rejecting claim that portion of state program requiring showing of necessity for important economic and social development for new or expanded discharges to Tier 2 waters was void for vagueness). *Cf.* Pac. Topsoils, Inc. v. Wash. Dep't of Ecology, 238 P.3d 1201, 1210 (Wash. Ct. App. 2010) (rejecting contention that state antidegradation program was unconstitutionally vague as applied to placement of fill material into wetlands without a permit).
216. Frey, *supra* note 111, at 44.
217. *Id.* at 52–53.

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like New Mexico,[218] Washington,[219] and Florida[220]—apply antidegradation provisions to all sources of pollution in ONRWs—including nonpoint sources—many, if not most, states appear to have no restrictions on nonpoint source discharges whatsoever.[221] As noted above, Montana's exemption for nonpoint sources has been upheld,[222] leaving high-quality waters in rural areas unprotected from the most significant sources of water pollution.[223]

4. Lack of Follow Up

Beyond the lessons learned from several decades of antidegradation litigation, it appears that some of the problems associated with the implementation of the policy stem from EPA's failure to follow up after a state adopts an antidegradation program. As evidenced by the Government Accountability Office's ("GAO") assessment of the Great Lakes Initiative ("GLI"), the lack of follow through turns in part on EPA's failure to issue a consistent permitting strategy for the states.[224] The GLI amendment to the CWA required that the eight Great Lakes states—Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin—include provisions consistent with EPA's GLI guidance in their regulations and permit programs.[225] But according to the GAO, the states' permitting structures are not consistent with each other or with any overarching comprehensive strategy. Moreover, EPA's attempts to assess the effectiveness of the states' antidegradation policies have been hindered by inadequate data.[226] Even for priority pollutants, like dioxin and other bioaccumulative chemicals, sufficiently sensitive measurements have not been developed.[227]

The GAO concluded that the GLI has limited potential to protect water quality for two primary reasons: (1) it focuses primarily on point sources and (2) it condones flexible implementation procedures, like variances, that relieve dischargers from stringent water quality standards.[228] Indeed, "the GLI allows the repeated use of some of these flexibilities and does not set a time frame for facilities to meet the GLI water quality criteria."[229] Moreover, the inability to reliably measure pollutant concentrations hinders the implementation of antidegradation policies.[230] The GAO's report advised EPA to issue permitting strategies that provide for a more consistent approach among the states and to gather and track information that can be used to assess the progress of implementing the antidegradation policy and its impact on reducing pollutant discharges and improving water quality.[231]

If the well-funded, well-coordinated GLI has made so little progress, it should be no surprise that antidegradation policies in other regions are lagging behind as well.[232] As the River Network concluded in its report on the intermountain west, "[t]he power of antidegradation is vastly underdeveloped."[233]

III. A Comparison of Antidegradation Programs and Public Land Management Protection Regimes

Most federal public land management statutes include some sort of antidegradation provision, ranging from outright prohibitions against impairment of the land and its natu-

218. *See supra* notes 140–42 and accompanying text.
219. Wash. Admin. Code § 173-201A-300(2)(e)(i), (iii) (2003); Hersh, *supra* note 131, at 232.
220. In Florida, "no degradation" of ONRWs and "Outstanding Florida Waters" is allowed, "notwithstanding any other Department rules that allow water quality lowering." *See* Fla. Admin. Code Ann. R. § 62-302.700(1) (2006). *See* Christie C. Morgan, *Challenges and Opportunities in Protecting Outstanding National Resource Waters*, 5-SPG Nat. Resources & Env't 30, 33 (1991) (citing Fla. Admin. Code Ann. R. § 17-4.242(3)(b) (1989)). Interestingly, the Florida legislature specifically prohibited horticultural peat mining—a key economic driver in the state—in Outstanding Florida Waters. Fla. Stat. Ann. § 373.414(6)(e)(2)(d) (West 2006).
221. *See, e.g.,* Frey, *supra* note 111, at 54, tbl. 22 (listing Arizona, Colorado, Montana, and Nevada as lacking explicit nonpoint source controls); *id.* at 53 ("The manner in which the states have addressed nonpoint source pollution control varies dramatically in the [intermountain] region.").
222. *See supra* notes 182–84 and accompanying text. *See also* Douglas R. Williams, *When Voluntary, Incentive-Based Controls Fail: Structuring a Regulatory Response to Agricultural Nonpoint Source Water Pollution*, 9 Wash. U. J.L. & Pol'y 21, 40 (2002) ("For [some] states, increases in nonpoint source pollution that impair existing uses would not be considered to violate state water quality standards or the antidegradation policy, so long as designated uses are fully supported.").
223. Blumm & Warnock, *supra* note 20, at 108–09.
224. *See* U.S. Gov't Accountability Office, GAO-05-82, Great Lakes Initiative: EPA Needs to Better Ensure the Complete and Consistent Implementation of Water Quality Standards 28–29 (2005) [hereinafter Great Lakes Initiative], *available at* http://www.gao.gov/assets/250/247244.pdf. The 1990 amendments to the CWA require EPA to publish guidance for the Great Lakes states on minimum standards, implementation procedures, and antidegradation policies for protecting water quality.
225. *See* Great Lakes Critical Programs Act of 1990 § 1, Pub. L. No. 101-596, 104 Stat. 3000, 3000 (1990).
226. *See* Great Lakes Initiative, *supra* note 224, at intro. ("Attempts by EPA to assess GLI's impact have been limited because of inadequate data or information that has not been gathered for determining progress on dischargers' efforts to reduce pollutants.").
227. "Of the nine [bioaccumulative chemicals of concern] [("BCC")] for which criteria have been established, only two—mercury and lindane—have EPA-approved methods that will measure below those criteria levels." U.S. Gov't Accountability Office, GAO-08-312T, Statement of David Maurer, EPA and States Have Made Progress, But Much Remains to Be Done if Water Quality Goals Are to Be Achieved 2 (2008) [hereinafter EPA and States Have Made Progress], *available at* http://www.gao.gov/assets/120/118778.pdf.
228. *See* Great Lakes Initiative, *supra* note 224, at 3.
229. EPA and States Have Made Progress, *supra* note 227, at 3.
230. *See* Great Lakes Initiative, *supra* note 224, at 12, 20. "For example, because chlordane has a water quality criterion of 0.25 nanograms per liter but can only be measured down to a level of 14 nanograms per liter, it cannot always be determined if the pollutant is exceeding the criterion." EPA and States Have Made Progress, *supra* note 227, at 3.
231. *See* Great Lakes Initiative, *supra* note 224, at 35–36. A follow-up audit in 2005 concluded that accurate analytical methods and measurements are still lacking, and that the use of variances, mixing zones, and other "permit flexibilities" continues to hinder progress toward meeting the criteria. EPA and States Have Made Progress, *supra* note 227, at 4, 7. For a summary of EPA's response to the GAO's critique, *see id.* at 9.
232. Congress appropriated $475 million for Great Lakes restoration in the 2010 Omnibus Appropriations Act, Pub. Law. No. 111-88. *See* Robert Esworthy, Cong. Res. Serv., R41149, EPA Appropriations for FY 2011, at 25–26, *available at* http://www.nationalaglawcenter.org/assets/crs/R41149.pdf. For analysis of the status of the nation's waters more generally, see The H. John Heinz III Ctr. for Sci., Econ. & the Env't, The State of the Nation's Ecosystems 2008 (2008), *available at* http://www.heinzcenter.org/Ecosystems_files/The%20State%20of%20the%20Nation%27s%20Ecosystems%202008.pdf (reporting on the continued degradation of U.S. water bodies and sediments by chemical contaminants and nutrients, especially from nonpoint sources).
233. Frey, *supra* note 111, at 39.

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ral resources to more lenient provisions aimed at protecting certain priority resources from destruction by incompatible uses. This part considers an array of preservation-oriented statutes governing wilderness areas, National Parks, Wildlife Refuges, and Wild and Scenic Rivers, as well as a key conservation-oriented statute that provides for sustained yields on lands managed by the National Forest Service. These statutes may apply directly to waters covered by the existing CWA antidegradation policy, especially Tier 3 ONRWs, many of which run through wilderness areas, parks, refuges, or other protected areas. Even when the land management statutes do not themselves apply to waters covered by the antidegradation policy, they may serve as models for strengthening the protections of the aquatic environments that are, or should be, covered by the CWA's antidegradation policy.

A. A Hierarchy of Protective Standards

1. The National Wilderness System

The Wilderness Act of 1964 is the nation's preeminent preservation statute.[234] Today, federally designated wilderness areas are found within National Forests, National Parks, Wildlife Refuges, and lands managed by the Bureau of Land Management ("BLM").[235] There are nearly seven hundred wilderness areas in forty-four states, covering 109 million acres of land.[236]

The fundamental purpose of the Wilderness Act is to secure the present and future benefits of untrammeled wild lands for the public.[237] To accomplish this goal, the Act specifies that wilderness areas shall be managed "in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for . . . the preservation of their wilderness character. . . ."[238] It also directs the managing agencies to protect and manage wilderness areas "so as to preserve natural conditions."[239]

In 1977, not long after the advent of the CWA's antidegradation policy, Dean William Hines called antidegradation "the pollution control analogue to wilderness protection in public lands management."[240] In implementation, however, the Wilderness Act has proven far more protective than the CWA's antidegradation policy.

To accomplish its preservation-oriented purposes, the Wilderness Act prohibits activities that would impair or otherwise detract from the wildness of wilderness areas.[241] Permanent roads as well as commercial activities are strictly forbidden.[242] With some exceptions, the Act also precludes motor vehicles, motorized equipment, mechanical transport, aircraft landings, structures, and installations.[243] One of these exceptions, found in section 4(c), allows such activities and facilities if they are "necessary to meet minimum requirements for the administration of the area . . . (including measures required in emergencies involving the health and safety of persons within the area)."[244]

Courts have construed this exception narrowly.[245] In a case involving the Kofa Wilderness in Arizona, the Ninth Circuit enjoined the construction and maintenance of tanks to augment water supplies for bighorn sheep.[246] The court found that, although wildlife conservation was undoubtedly a legitimate management objective, the tanks were installations that unlawfully trammeled the wilderness.[247] Although such installations might be useful to sheep threatened by drought and high temperatures, the U.S. Fish and Wildlife Service ("FWS") had failed to establish that they were a necessary minimum requirement for wilderness administration.[248] The Eleventh Circuit reached a similar conclusion in *Wilderness Watch v. Mainella*, where it rejected the Park Service's claim that transporting tourists in a passenger van across a wilderness area to provide access to historical structures was "necessary" just because it made access more con-

234. *See* Sandra Zellmer, *Wilderness, Water, and Climate Change*, 42 Envtl. L. 313, 316 (2012); William Rodgers, *The Seven Statutory Wonders of U.S. Environmental Law: Origins and Morphology*, 27 Loy. L.A. L. Rev. 1009 (2004).

235. *Land Purchase Under the Federal Land Transaction Facilitation Act (FLTFA)*, Bureau of Land Mgmt. ("BLM"), U.S. Dep't of Interior, http://www.blm.gov/ca/st/en/prog/lands/fltfa/land_acquisition.html (last updated Oct. 21, 2011).

236. *See* Russ W. Gorte, Cong. Research Serv., RL31477, Wilderness: Overview and Statistics 4 (2008). Excluding Alaska, wilderness areas comprise only three percent of the United States. *Id.*

237. *See* Michael McCloskey, *The Wilderness Act of 1964: Its Background and Meaning*, 45 Or. L. Rev. 288, 309 (1966).

238. 16 U.S.C. § 1131(a) (2006). For descriptions of "wilderness character," *see* Jerry F. Franklin & Gregory H. Aplet, *Wilderness Ecosystems, in* Wilderness Management: Stewardship and Protection of Resources and Values 269–70 (John C. Hendee & Chad P. Dawson eds., 2002) [hereinafter Wilderness Management]; David N. Cole, *Ecological Impacts of Wilderness Recreation and Their Management*, *in* Wilderness Management, *supra,* at 414–16 (discussing the balance of objectives between protecting wilderness ecosystems and the quality of the visitor's experience).

239. 16 U.S.C. § 1131(c).

240. Hines, *supra* note 8, at 645. Hines added: "Because air and water are to an extent renewable resources, their degradation may not involve all of the problems of irreversibility that are raised in the destruction of other natural environments. Therefore, it might be expected that the policy would be applied most stringently when the threatened air and water resources either themselves are subject to irreversible damage or are inextricably related to other natural systems subject to such harm." *Id.* at 652–53.

241. 16 U.S.C. § 1131(b). *See* Californians for Alts. to Toxics v. U.S. Fish & Wildlife Serv., 814 F. Supp. 2d 992, 1014–17 (E.D. Cal. 2011) (agencies that manage wilderness are "responsible for preserving . . . wilderness character"; "the Act is intended to enshrine the long-term preservation of wilderness areas as the ultimate goal") (citing Wilderness Watch, Inc. v. U.S. Fish & Wildlife Serv., 629 F.3d 1024, 1033 (9th Cir. 2010)). The principal author of the Wilderness Act, Howard Zahniser, viewed the term "wild" as synonymous with "untrammeled": "not subject to human controls and manipulations that hamper the free play of natural forces." Zellmer, *supra* note 234, at 10.

242. 16 U.S.C. § 1133(c) (2006). *See* Wilderness Soc'y v. U.S. Fish & Wildlife Serv., 353 F.3d 1051, 1061–63 (9th Cir. 2003), *as amended on reh'g en banc in part*, 360 F.3d 1374 (9th Cir. 2004) (enjoining commercial salmon enhancement project); Barnes v. Babbitt, 329 F. Supp. 2d 1141, 1154 (D. Ariz. 2004) (invalidating a plan that allowed repairs and maintenance of access routes as unlawful road construction).

243. 16 U.S.C. § 1133(c).

244. *Id.*

245. *See* Peter A. Appel, *Wilderness and the Courts*, 29 Stan. Envtl. L.J. 62, 82 (2010) [hereinafter Appel, *Wilderness and the Courts*]; Peter A. Appel, *Wilderness, the Courts, and the Effect of Politics on Judicial Decisionmaking,* 35 Harv. Envtl. L. Rev. 275, 293–94 (2011) (finding that courts are more likely to uphold wilderness-protective decisions than they are wilderness-impacting decisions).

246. *Wilderness Watch, Inc.*, 629 F.3d at 1024.

247. *Id.* at 1033–34.

248. *Id.* (citing 16 U.S.C. § 1133(c) (2006)).

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venient and had "no net increase" in impacts to the land.[249] Likewise, in *Californians for Alternatives to Toxics v. U.S. Fish and Wildlife Service*, a federal district court disagreed with the Forest Service that the application of rotenone was necessary to promote the recovery of the Paiute Cutthroat Trout and to preserve wilderness character.[250] The agency improperly neglected the well-being of other endemic species in the wilderness.[251]

The second exception for otherwise non-conforming activities in wilderness areas, section 4(d), authorizes "such measures . . . as may be necessary in the control of fire, insects, and diseases."[252] The only published opinions directly on point involve the Forest Service's efforts to control the southern pine beetle.[253] In the first of two related cases, the court remanded a proposal for extensive chemical spraying and logging as "wholly antithetical to the wilderness policy established by Congress," and "hardly consonant with preservation and protection of these areas in their natural state."[254] The court explained that "[o]nly a *clear necessity* for upsetting the equilibrium of the ecology could justify this highly injurious, semi-experimental venture of limited effectiveness."[255] In the second case, the court upheld a pared down version of the proposal that used "spot control" logging to combat infestations.[256] It approved measures that "fall short of full effectiveness" so long as they are "reasonably designed" to limit infestation.[257] The court was careful to note, however, that the agency had significantly scaled back its plan and had adopted several preservation-oriented safeguards.[258]

The Wilderness Act has been a significant factor in preventing the degradation of federally designated wilderness areas.[259] Of course, there is room for criticism. Some commentators argue that "managers have extensively manipulated wilderness to achieve desired ends."[260] But the Wilderness Act provides sufficiently detailed standards to hold officials accountable.[261] Those standards afford greater discretion to err on the side of overprotection of wilderness than underprotection. Based on an empirical analysis of wilderness litigation in the federal courts, Professor Peter Appel found that agencies are far more successful in defending against claims that they protected wilderness too stringently than that they provided inadequate protection.[262] Appel described this phenomenon "as a one-way judicial ratchet in favor of wilderness protection."[263]

Although the Wilderness Act is not a complete analogue to the CWA, given its distinctive preservation-oriented edict for lands that are owned solely by the federal government, it can provide a few important lessons for improving the antidegradation program. The explicit statutory prohibition against impairment with only a few narrowly crafted statutory exceptions, coupled with the directive to preserve wilderness character and natural conditions, gives agencies, courts, and citizens substantial powers to prevent degradation.[264] In addition, courts' willingness to require "a *clear* necessity," not just convenience, to invoke exceptions to the Act's preservation provisions could serve as a useful guidepost for implementation of the necessity determination for degradation of Tier 2 waters.[265]

2. The National Parks

One of the earliest expressions of an antidegradation requirement in federal law is found in the National Park Service Organic Act of 1916 ("Organic Act").[266] The Organic Act requires the Park Service to manage the national parks "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner . . . as will leave them unimpaired for the enjoyment of future generations."[267] Thus, in making decisions, the Park Service must "examine the duration, severity, and magnitude of the impact; the resources and values affected; and direct, indirect, and cumulative effects of

249. Wilderness Watch v. Mainella, 375 F.3d 1085, 1096 (11th Cir. 2004).
250. Californians for Alts. to Toxics v. U.S. Fish & Wildlife Serv., 814 F. Supp. 2d 992, 1019 (E.D. Cal. 2011). Rotenone is a powerful poison that kills everything with gills.
251. *Id.* However, where the agency makes extensive factual findings that otherwise incompatible activities, such as motorized access, are necessary to preserve wilderness character, for example, by aiding "the restoration of a specific aspect of the wilderness character . . . that had earlier been destroyed by man," its decision may be upheld. Wolf Recovery Found. v. U.S. Forest Serv., 692 F. Supp. 2d 1264, 1268 (D. Idaho 2010).
252. 16 U.S.C. § 1133(d)(1) (2006).
253. Sierra Club v. Lyng (*Lyng I*), 662 F. Supp. 40 (D.D.C. 1987); Sierra Club v. Lyng (*Lyng II*), 663 F. Supp. 556 (D.D.C. 1987).
254. *Lyng I*, 662 F. Supp. at 43.
255. *Id.* (emphasis added).
256. *Lyng II*, 663 F. Supp. at 556.
257. *Id.* at 560.
258. *Id.* at 557–59. The Forest Service assured the court that the activities would not "unnecessarily sacrifice[ ]" wilderness values and were not aimed at promoting commercial timber harvest. *Id.* at 560. The court found that the primary purpose of the agency's previous plan for a large-scale eradication program was commercial in nature. *Lyng I*, 662 F. Supp. at 40.
259. *See* Appel, *Wilderness and the Courts*, *supra* note 245, at 129.
260. Gordon Steinhoff, *Interpreting the Wilderness Act of 1964*, 17 Mo. Envtl. L. & Pol'y. Rev. 492, 501 (2010); *see also* Gordon Steinhoff, *The Wilderness Act, Prohibited Uses, and Exceptions: How Much Manipulation of Wilderness Is Too Much?*, 51 Nat. Resources J. 287, 294 (2011).
261. *See* Appel, *Wilderness in the Courts*, *supra* note 245, at 66–67.
262. *Id.*
263. *Id.* at 67.
264. *See, e.g.*, *Lyng I,* 662 F. Supp. at 43.
265. *See supra* note 249 (describing Wilderness Watch v. Mainella, 375 F.3d 1085 (11th Cir. 2004)); *Lyng I*, 662 F. Supp. at 42 (emphasis added).
266. 16 U.S.C. § 1 (2006).
267. *Id.* A 1978 amendment to the Organic Act forbids the Park Service from exercising its protection and management responsibilities "in derogation of the values and purposes" of the parks. Redwood Act of 1978, § 101(b), Pub. L. No. 95-250, 92 Stat. 163, 166 (codified as amended at 16 U.S.C. § 1a-1 (2006)). The Park Service construes the "no derogation" standard as synonymous with the non-impairment standard of the 1916 Organic Act, Nat'l Park Serv., Management Policies 2006 § 1.4.2 (2006) [hereinafter Management Policies 2006], *available at* http://www.nps.gov/policy/mp2006.pdf, and courts have generally concurred. *See, e.g.*, Sierra Club N. Star Chapter v. LaHood, 693 F. Supp. 2d 958, 965, 983 (D. Minn. 2010); S. Utah Wilderness Alliance v. Nat'l Park Serv., 387 F. Supp. 2d 1178, 1192 (D. Utah 2005); United States v. Garfield Cnty., 122 F. Supp. 2d 1201, 1244, 1249 (D. Utah 2000); *see also* Sierra Club v. Mainella, 459 F. Supp. 2d 76, 97–103 (D.D.C. 2006) (holding that decisions granting applications for exemptions from directional drilling regulations were arbitrary and capricious because the Park Service failed to explain its conclusion that impacts from nearby surface drilling activities, such as air pollution, noise, light, water pollution, fire, or spills, would not impair park resources and values), *appeal dismissed per stipulation,* Nos. 06-5419, 07-5004, 2007 WL 1125716 (D.C. Cir. Mar. 30, 2007).

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the action."[268] If impairment would result, "the action must not be approved."[269]

Over the years, the National Park System has been wildly popular with the American public, and it has grown to include 397 national parks located in 49 states and several U.S. territories.[270] But the dual mandate of the Organic Act—to conserve park resources from impairment and also to provide for the enjoyment of them—poses a significant challenge for the Park Service, and it has not always prevented degradation of park resources.[271] As Professor Robert Keiter has explained, the national parks are vulnerable to outside development pressures that have the potential to adversely affect wildlife, air and water quality, and surrounding landscapes.[272]

Although the National Park System is not perfect in terms of antidegradation, the Organic Act's non-impairment requirement, coupled with its overarching conservation mandate, places substantive parameters on the Park Service's discretion that minimize degradation and promote long-term conservation of resources.[273] The Park Service states that its conservation mandate, which extends to the ecological, biological, and physical processes that sustain the parks and their natural resources, "applies all the time, with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired."[274] Where uncertainties arise, the conservation concept acts as a precautionary principle of sorts. The Park Service recognizes that the "threshold at which impairment occurs is not always readily apparent,"[275] so it has committed itself to "apply a standard that offers greater assurance that impairment will not occur . . . by avoiding impacts that it determines to be unacceptable."[276] It defines "unacceptable impacts" as those that would individually or cumulatively conflict with a park's purposes or values, interfere with uses of a park's natural and cultural resources, diminish enjoyment by current or future generations, or unreasonably interfere with the peace, tranquility, or natural soundscape of wilderness and other protected locations within the park.[277]

The courts have generally agreed that "when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant."[278] They tend to uphold the Park Service's decisions to restrict access and usage to ensure against impairment of resources and thereby promote conservation.[279] In one case, a court even found an affirmative duty to assert federal reserved water rights for a unit of the National Park System—a canyon—that required instream flows to maintain its ecological integrity.[280] Thus, the Park Service's relatively stringent definitions of conservation, "impairment," and "unacceptable impacts" could serve as useful guideposts in defining "antidegradation" of high-quality waters in the CWA context.

3. Wild and Scenic Rivers

The Wild and Scenic Rivers Act ("WSRA") of 1968 creates a nationwide network of wild, scenic, and recreational rivers.[281] There are over two hundred rivers, encompassing thousands of miles, in the Wild and Scenic Rivers System.[282]

In the WSRA, Congress declared a policy to preserve the free-flowing characteristics and water quality of designated rivers.[283] To be included, rivers must be free-flowing and must also have "outstandingly remarkable" values ("ORV").[284] Upon designation, rivers are classified as wild, scenic, or recreational. Wild rivers must be free of impoundments, "with watersheds or shorelines essentially primitive

268. Lower St. Croix National Scenic Riverway, 66 Fed. Reg. 56848, at 56850 (Nov. 13, 2001).

269. Management Policies 2006, *supra* note 267, at § 1.4.7; *see* Terbush v. United States, 516 F.3d 1125, 1132 (9th Cir. 2008) ("'Whether an individual action is or is not an 'impairment' is a management determination. In reaching it, the manager should consider such factors as the spatial and temporal extent of the impacts, the resources being impacted and their ability to adjust those impacts, the relation of the impacted resources to other park resources, and the cumulative as well as the individual effects.'") (quoting Nat'l Park Serv., 1988 Management Policies (1988))). In *Terbush,* the court rejected most of the tort claims brought by the family of a deceased mountain climber under the Federal Tort Claims Act, which shields federal agencies from liability for discretionary activities. 28 U.S.C. § 2680(a) (2006); *Terbush*, 516 U.S. at 1128–29. It concluded that the Park Service had "considerable" discretion under its Management Policies, including the non-impairment standard, grounded in the Act's "broad mandate to balance conservation with access and safety." *Terbush*, 516 U.S. at 1131–32.

270. *About Us*, Nat'l Park Serv., http://www.nps.gov/aboutus/index.htm (last updated Dec. 4, 2012).

271. Robert Keiter, *The National Park System: Visions For Tomorrow*, 50 Nat. Resources J. 71, 72–73 (2010).

272. *Id.*

273. 16 U.S.C. § 1 (2006).

274. Management Policies 2006, *supra* note 267, at §§ 1.4.3, 1.4.6. However, the Park Service asserts management discretion "to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values." *Id.*

275. *Id.* § 1.4.7.1.

276. *Id.*

277. *Id.*

278. Fund for Animals v. Norton, 294 F. Supp. 2d 92, 96–97, 101, 103 (D.D.C. 2003) (quoting Nat'l Park Serv., 2001 Management Policies § 1.4.3 (2001)) (internal quotation marks omitted) (holding that adoption of final rule allowing 950 snowmobiles to enter Yellowstone and Grand Teton National Parks each day was arbitrary and capricious), *motion for relief from judgment granted*, 323 F. Supp. 2d 7 (D.D.C. 2004), *motion to amend denied*, 326 F. Supp. 2d 124 (D.D.C. 2004), *appeal dismissed per stipulation*, No. 03-5365, 2005 WL 375622 (D.C. Cir. Feb. 16, 2005).

279. *See* Bicycle Trails Council of Marin v. Babbitt, 82 F.3d 1445, 1454 (9th Cir. 1996); Mich. United Conservation Clubs v. Lujan, 949 F.2d 202, 207 (6th Cir. 1991); Organized Fishermen of Fla. v. Watt, 590 F. Supp. 805, 812–14 (S.D. Fla. 1984), *aff'd sub nom.* Organized Fishermen of Fla. v. Hodel, 775 F.2d 1544 (11th Cir. 1985); *see also* Keiter, *supra* note 271, at 87 ("When confronted with challenges to these recreational limitations, federal courts have consistently endorsed the Park Service's 'resource protection-first' interpretation of its legal responsibilities."). *But see* Denise Antolini, *National Park Law in the U.S.: Conservation, Conflict, and Centennial Values*, 33 Wm. & Mary Envtl. L. & Pol'y Rev. 851, 891–96 (2009) (citing Davis v. Latschar, 202 F.3d 349 (D.C. Cir. 2000) (upholding a decision to conduct a controlled deer hunt in Gettysburg National Military Park)); River Runners for Wilderness v. Martin, No. 06-894, 2007 WL 4200677 (D. Ariz. 2007) (upholding a plan to provide extensive access to commercial boaters on the Colorado River in the Grand Canyon); Int'l Snowmobile Mfrs. Ass'n v. Norton, 340 F. Supp. 2d 1249 (D. Wyo. 2004) (remanding a decision to restrict snowmobiling)).

280. High Country Citizens' Alliance v. Norton, 448 F. Supp. 2d 1235, 1242, 1246–53 (D. Colo. 2006).

281. 16 U.S.C. § 1273(a) (2006); *see* Brian E. Gray, *No Holier Temples: Protecting the National Parks Through Wild and Scenic River Designation*, 58 U. Colo. L. Rev. 551, 552 (1988).

282. *National Wild & Scenic Rivers*, U.S. Nat'l Wild & Scenic Rivers, http://www.rivers.gov/ (2012).

283. 16 U.S.C. § 1271 (2006).

284. *Id.* §§ 1273(b), 1271.

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and waters unpolluted."[285] Scenic and recreational rivers are also generally free of impoundments, but they may have some development along their shorelines.[286]

Wild river segments, which like wilderness areas are "essentially primitive," are highly protected.[287] Rivers classified as recreational or scenic are governed by more lenient standards.[288] Regardless of classification, dams are prohibited,[289] and designated rivers must be administered in a manner to "protect and enhance" their ORVs.[290] Moreover, no federal department or agency may undertake or assist in any "water resources project" that would have a "direct and adverse effect" on a river's ORVs,[291] and deleterious projects may be enjoined.[292]

In a series of Oregon cases decided in the late 1990s, courts found that the BLM's management of grazing practices violated the WSRA.[293] In *Oregon Natural Desert Association v. Green,* the court remanded the BLM's management plan for failure to consider whether grazing would "protect and enhance" vegetative ORVs.[294] Grazing was subsequently enjoined when the BLM's plan showed the negative impacts of grazing on scenic and recreational values.[295]

Although the Oregon cases indicate a willingness to engage in probing judicial review of activities with undeniably detrimental effects on ORVs, courts have been inconsistent in reviewing challenges to the Comprehensive Management Plans ("CMP") for designated river segments.[296] In *Friends of Yosemite Valley v. Kempthorne*, the court found that the lack of a comprehensive CMP warranted enjoining nine redevelopment projects in a designated river corridor.[297] Conversely, in *Center for Biological Diversity v. Lueckel*, the court dismissed a complaint for lack of standing where the plaintiffs failed to show a causal link between the authorization of detrimental logging activities and the absence of a CMP.[298] According to the court, there was "no evidence" that CMPs "typically provide for greater restrictions" than other types of federal land management plans.[299]

Like the CWA's antidegradation program, WSRA planning and management restrictions seem to be underutilized tools.[300] As litigants have found, broad-brush challenges to a management agency's discretion to balance competing uses typically fail, but challenges that identify discrete, harmful activities that violate specific obligations to "protect and enhance" specific ORVs in a particular river segment may gain more traction.[301]

4. National Wildlife Refuges

The statutory directive to conserve the resources of the national wildlife refuges is analogous to the CWA's mandate that high-quality waters be protected from degradation. The National Wildlife Refuge System Improvement Act of 1997 ("NWRSIA") defines the mission of the Wildlife Refuge System as the "conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats . . . for the benefit of present and future generations of Americans."[302] Thus, conservation is the first priority for wildlife refuges.[303] The Act defines conservation to include not only maintenance of existing refuge resources, but also, where appropriate, restoration and enhancement of healthy fish, wildlife, and plant populations.[304] It directs the

285. *Id.* § 1273(b)(1). Like wilderness areas, wild rivers "represent vestiges of primitive America." *Id.*
286. *Id.* § 1273(b)(2)-(b)(3) (2006). *See* Sierra Club v. Pena, 1 F. Supp. 2d 971, 971 n. 6 (D. Minn. 1998); *see also* Sierra Club N. Star Chapter v. LaHood, 693 F. Supp. 2d 958, 964 (D. Minn. 2010).
287. 16 U.S.C. § 1273(b)(1) (2006); *see* Wilderness Watch v. U.S. Forest Serv., 143 F. Supp. 2d 1186, 1205 (D. Mont. 2000) (stating that hunting and fishing lodges not allowed on wild river segments that should "represent vestiges of primitive America"); *see also* Or. Natural Desert Ass'n v. Singleton, 75 F. Supp. 2d 1139, 1139 (D. Or. 1999) (permanently enjoining grazing in the wild river corridor); *but see* Riverhawks v. Zepeda, 228 F. Supp. 2d 1173, 1183 (D. Or. 2002) (finding that recreational activities may interfere with aspects of a wild river, but deferring to the agency's balance of values that allowed motorboats continued access to the river).
288. 16 U.S.C. § 1273(b)(2)-(3) (2006); *see* Friends of Yosemite Valley v. Norton, 348 F.3d 789, 803–04 (9th Cir. 2003) (remanding the management plan for the Merced River for failure to protect and enhance the river's geological, biological, and cultural ORVs and for failing to address impacts of visitor use); *see also* Sierra Club v. United States, 23 F. Supp. 2d 1132, 1140 (N.D Cal. 1998) (refusing to enjoin the Park Service from re-building a lodge and re-routing a road near scenic and recreational segments of the Merced River, and finding that the project would not impinge on ORVs but instead would improve accessibility and environmental conditions by moving buildings further from the river).
289. 16 U.S.C. § 1278(a) (2006); *see* Swanson Mining Corp. v. FERC, 790 F.2d 96, 102–05 (D.C. Cir. 1986) (Wild and Scenic Rivers Act prevents FERC from licensing hydroelectric projects on designated rivers even if FERC believes there would be no adverse effects to ORVs).
290. 16 U.S.C. § 1281(a) (2006).
291. *Id.* § 1278(b). Such projects include water diversions, transmission lines, bridges, piers, levees, and boat ramps. *See* 36 C.F.R. § 297.3 (2011); *Pena*, 1 F. Supp. 2d at 979 (concluding that a bridge that would result in changes to a river's free-flowing characteristics was a "water resources project").
292. *Pena*, 1 F. Supp. 2d at 981.
293. Or. Natural Desert Ass'n v. Green, 953 F. Supp. 1133 (D. Or. 1997); Or. Natural Desert Ass'n v. Singleton, 75 F. Supp. 2d 1139 (D. Or. 1999).
294. *Or. Natural Desert Ass'n v. Green,* 953 F. Supp. at 1144.
295. *Or. Natural Desert Ass'n v. Singleton*, 75 F. Supp. 2d at1141.
296. *See* 16 U.S.C. § 1274(d)(1) (2006) (requiring comprehensive management plans ("CMP") within three years of designation).
297. Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1025 (9th Cir. 2008); *see also* Sierra Club v. Babbitt, 69 F. Supp. 2d 1202, 1252 (E.D. Cal. 1999) ("[W]here . . . an agency has egregiously violated a procedural planning requirement which is closely linked to the ability of the agency to adequately assess the impacts of future plans and actions on the river's ORVs, that procedural violation lends great weight to assertions that the substantive requirement to preserve and enhance the values for which river was included in the wild and scenic river system has been violated.").
298. Ctr. for Biological Diversity v. Lueckel, 417 F.3d 532, 534 (6th Cir. 2005); *see also In re* Montana Wilderness Assn., 807 F. Supp. 2d 990, 1000 (D. Mont. 2011) (rejecting the argument that a plan's purported failure to address motorized uses and user capacities violated the Wild and Scenic Rivers Act ("WSRA") when the BLM had balanced competing values of solitude and recreation by imposing road closures and seasonal restrictions while reaffirming long-standing uses).
299. *Ctr. for Biological Diversity*, 417 F.3d at 540. The court found no evidence that a CMP would provide greater protection than the existing forest plan, which stated that designated river corridors "will be managed to protect and enhance the values for which the river was designated."
300. *See* Murray Feldman et al., *Learning to Manage Our Wild and Scenic River System*, 20 Nat. Res. & Env't 10, 70 (2005) (although the WSRA "provides a unique blend of conservation, development, and use for its river segment components . . . the managing agencies . . . are finding it difficult to give priority to wild and scenic rivers in these times of reduced budgets for resource management activities").
301. *Id.*
302. 16 U.S.C. § 668dd(a)(2) (2006).
303. 3 George Cameron Coggins & Robert L. Glicksman, Public Natural Resources Law § 24:5 (2nd ed. 2007) (citing 16 U.S.C. § 668dd(a)(4)(D)).
304. 16 U.S.C. § 668ee(4) (2006).

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FWS to conserve fish, wildlife, plants, and their habitats, and to ensure maintenance of biological integrity, diversity, and environmental health within the Wildlife Refuge System.[305]

According to Professor Robert Fischman, the NWRSIA's substantive management criteria provide "relatively rich detail . . . compared to previous federal organic statutes."[306] To achieve the Wildlife Refuge System's conservation goals, the Act allows only "compatible uses" that "will not materially interfere with or detract from the fulfillment of" the System's mission or individual refuge purposes.[307] FWS regulations preclude any new use or expansion, renewal, or extension of an existing use unless it is deemed a compatible use.[308] The FWS must either terminate the incompatible use or modify it to make it compatible.[309] Economic uses of refuge resources—livestock grazing, mineral development, and other uses conducted for a profit—must satisfy an additional requirement:[310] such uses must contribute to the achievement of the refuge purposes or the Wildlife Refuge System mission.[311]

Under the FWS regulations, compatibility determinations are typically made as part of the comprehensive conservation plan ("CCP") for each refuge,[312] but compatibility may be reevaluated at any time,[313] such as when changed conditions or significant new information concerning the effects of the use exist.[314] The FWS Manual emphasizes that the first goal of a CCP is "[t]o ensure that wildlife comes first in the National Wildlife Refuge System."[315]

Although recreational impacts could undercut the conservation mission, the statute identifies wildlife-dependent recreation, such as hunting and fishing, as a preferred (presumptively compatible) use of the Wildlife Refuge System.[316] Together, the statute and the FWS management policies guard against this possibility by imposing biological integrity, diversity, and environmental health as criteria for deciding whether to allow wildlife-dependent recreation.[317]

A potential deficiency in the statutory scheme is the failure to apply the compatibility requirement to the FWS's own management actions. In *Fund for Animals v. Clark*,[318] the district court held that the FWS had no statutory duty to conduct a compatibility analysis of its feeding programs for bison and elk in the National Elk Refuge because activities conducted by refuge managers were not refuge "uses" within the meaning of the Act.[319] The court interpreted the statutory list of "uses" governed by the compatibility requirement to be limited to those performed by third parties or the public.[320] It bolstered this conclusion by referencing section 668dd(c), which it construed as "specifically exempt[ing] from the compatibility requirement actions taken by 'persons authorized to manage' the refuge area."[321] The FWS has since adopted a regulation defining "refuge use" as use "by the public or other non-National Wildlife Refuge System entity."[322]

Despite this gap, the stewardship responsibilities embedded in the broadly applicable statutory conservation mandate should guide decisionmakers to prevent impairment of

305. *Id.* § 668dd(a)(4). An executive order issued by President Clinton characterizes the conservation duty as a "trustee and stewardship" responsibility: "[f]ish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to *conserve and enhance the quality and diversity* of fish and wildlife habitat within refuges." Exec. Order No. 12996, 61 Fed. Reg. 13647 (Mar. 25, 1996) (emphasis added).

306. Robert L. Fischman, *From Words to Action: The Impact and Legal Status of the 2006 National Wildlife Refuge System Management Policies,* 26 Stan. Envtl. L.J. 77, 79 (2007).

307. 16 U.S.C.§ 668ee(1).

308. 50 C.F.R. § 26.41 (2012).

309. *Id.* § 26.41(d).

310. *Id.* § 29.1 (2012). The FWS's manual for wildlife refuges defines economic use as "[a]ny activity involving the use of a refuge or its resources for a profit." U.S. Fish & Wildlife Serv., Refuge Manual, 5 FW § 17.6(D) (2000) [hereinafter Refuge Manual]. In a separate FWS policy, the term "refuge management economic activity" is defined as "[a] refuge management activity on a national wildlife refuge that results in generation of a commodity which is or can be sold for income or revenue or traded for goods or services." *Id.* at 603 FW § 2.6(N) (2000). *See* Del. Audubon Soc'y, Inc. v. Salazar, 829 F. Supp. 2d 273, 289–90 (D. Del. 2011) (finding that a dune restoration project was not an economic use, where sand would not be sold but would be used to restore beaches and dunes).

311. 50 C.F.R. § 29.1. *See* Del. Audubon Soc'y., Inc. v. Sec'y of the U.S. Dep't of the Interior, 612 F. Supp. 2d 442 (D. Del. 2009) (enjoining decision to allow cooperative farming and farming with genetically modified crops in a refuge without first preparing a written compatibility determination); Stevens Cnty. v. U.S. Dep't of Interior, 507 F. Supp. 2d 1127, 1133–35 (E.D. Wash. 2007) (FWS's determination that livestock grazing was not a compatible use was entitled to deference; although some studies showed the grazing could have a positive impact on habitat, other studies demonstrated the negative effects of grazing on migratory bird populations and riparian habitats, and site-specific studies demonstrated that grazing materially interfered with wildlife management on the refuge); *see also* Wilderness Soc'y v. Babbitt, 5 F.3d 383 (9th Cir. 1993) (remanding FWS's decision to renew grazing permits where the FWS failed to consider the incompatibility of grazing with refuge purposes, even in the face of report of the refuge manager that current grazing practices were harming fish and wildlife habitats).

312. *See* 50 C.F.R § 26.41 (2012) ("We will usually complete compatibility determinations as part of the comprehensive conservation plan or step-down management plan process for individual uses, specific use programs, or groups of related uses described in the plan").

313. *Id.* § 25.21(f) (2012); *see also id.* § 25.21(b) ("We may open a national wildlife refuge for any refuge use, or expand, renew, or extend an existing refuge use only after the Refuge Manager determines that it is a compatible use and not inconsistent with any applicable law").

314. *Id.* § 25.21(f).

315. Refuge Manual, 602 FW § 3.3.A (2000). Comprehensive conservation plans are required by 16 U.S.C. § 668dd(e) and 50 C.F.R. § 26.41.

316. *See* 16 U.S.C. § 668dd(3)(a)(iii) (2006) ("Wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety. Except for consideration of consistency with State laws and regulations as provided for in subsection (m) of this section, no other determinations or findings are required . . . for wildlife-dependent recreation to occur."). Wildlife-dependent uses include hunting, fishing, wildlife observation and photography, and environmental education and interpretation. *Id.* § 668ee(2) (2012).

317. Fischman, *supra* note 306, at 111–12 (citing Refuge Manual, 605 FW §§ 1.13(B), 1.8(B), (D)(3) (2000)). *See also Appropriate Refuge Uses,* U.S. Fish & Wildlife Serv., http://www.fws.gov/policy/601fw3.html (last updated April 16, 2001).

318. Fund for Animals v. Clark, 27 F. Supp. 2d 8 (D.D.C. 1998).

319. *Id.* at 12.

320. *Id.* at 11 (citing 16 U.S.C. § 668dd(1)(A)-(B)). A district court in Delaware found that a FWS dune restoration project was within the agency's "sound professional judgment" and upheld the FWS's compatibility determination, without analyzing whether the FWS was statutorily required to meet the compatibility requirement. Del. Audubon Soc'y v. Salazar, 829 F. Supp. 2d 273, 287–90 (D. Del. 2011).

321. *Clark*, 27 F. Supp. 2d at 11 (citing 16 U.S.C. § 668dd(c)). Subsection 668dd(c) sets forth the general prohibitions against any persons disturbing or possessing "any real or personal property of the United States, including natural growth, in any area of the System," or taking or possessing any wild animals within refuges, "unless such activities are performed by persons authorized to manage such area, *or* unless such activities are permitted . . . [as compatible uses] under subsection (d). . . ." 16 U.S.C. § 668dd(c) (emphasis added).

322. *See* 50 C.F.R. § 25.12(a) (2012).

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refuge resources.[323] Courts have been willing to uphold FWS decisions to limit access to protect refuge resources,[324] but they have been equally inclined to uphold FWS decisions to allow use.[325] Thus, discretion can cut both ways. Yet, as indicated in Part IV below, the NWRSIA's directive to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations,"[326] coupled with its compatibility requirement, is useful in the effort to supply a meaningful definition of degradation under the CWA.

5. Multiple Use, Sustained Yield Management by the Forest Service

The U.S. Forest Service manages the lands under its jurisdiction under a multiple use, sustained yield mandate that is less preservation-oriented than the management regimes discussed above.[327] Yet the organic statute for the Forest Service provides some protection against degradation of certain resources, and therefore may be relevant to achieving the goals of the antidegradation policy.

The management and planning provisions of the National Forest Management Act of 1976 ("NFMA") guide the Forest Service in seeking an appropriate mix of uses in the National Forest System.[328] The statute requires forest plans to assure that land productivity is not substantially and permanently impaired.[329] In addition, forest plans must prevent irreversible damage to soil, slope, or other watershed conditions and protect streams and other bodies of water from detrimental changes if harvests are likely to adversely affect water conditions or fish habitat.[330] According to the courts, Congress delegated to the Forest Service the discretion to balance these protections while providing for multiple uses of the forests.[331] As a result, the courts have been loath to upset the multiple use, sustained yield agenda.[332]

NFMA also requires that forest plans "provide for diversity of plant and animal communities."[333] This imprecise provision imposes weak constraints on Forest Service discretion.[334] The courts have generally refused to require any precise level of diversity[335] and have tended to defer to the agency's technical expertise in applying the diversity requirement,[336] although less so in cases involving earlier versions of the agency's implementing regulations that contained relatively specific constraints on forest management.[337]

The general nature of NFMA's broad constraints, and the judicial reluctance in many cases to rely on them to halt timber, grazing, and other projects detrimental to resource integrity, make them poor models for strengthening the CWA's antidegradation policy. Nevertheless, the focus in the diversity regulations on ecosystem characteristics and biological communities can provide useful guidance for defining degradation and for identifying, restoring, and maintaining the integrity of important aquatic ecosystems, especially those with "exceptional ecological significance," through antidegradation requirements.[338]

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323. Fischman, *supra* note 306, at 111.
324. *See* Niobrara River Ranch, L.L.C. v. Huber, 277 F. Supp. 2d 1020 (D. Neb. 2003), *aff'd*, 373 F.3d 881 (8th Cir. 2004) (affirming FWS's decision to limit recreational rafting and canoeing in a refuge).
325. *See* Wilderness Soc'y v. U.S. Fish & Wildlife Serv., 316 F.3d 913 (9th Cir. 2003) (upholding a decision that a salmon aquaculture project within a refuge in Alaska was compatible with refuge purposes), *reh'g en banc granted*, *opinion vacated*, 340 F.3d 768 (9th Cir. 2003), *amended on reh'g en banc*, 360 F.3d 1374 (9th Cir. 2004) (finding that aquaculture project violated the Wilderness Act without resolving whether the project also violated the NWRSIA). In *Fund for Animals v. Hall*, the court found that the FWS violated NEPA (but not the NWRSIA) by failing to consider the cumulative impacts of recreational hunting in sixty refuges, but on remand, the FWS cured this defect by considering cumulative impacts in its revised refuge-level assessments. Fund for Animals v. Hall, 777 F. Supp. 2d 92, 92 (D.D.C. 2011).
326. 16 U.S.C. § 668dd(a)(4)(B) (2006).
327. *See* 1 Coggins & Glicksman, *supra* note 303, at § 6:17 (describing mandate and discretion of the Forest Service). Another multiple-use statute, the Federal Land Policy and Management Act, requires that the BLM "by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the [public] lands." 42 U.S.C. § 1732(b) (2006). The statute fails to define these terms, and the regulatory history has taken several turns. *See* 43 C.F.R. § 3809.0-5(k) (1981); 43 C.F.R. § 3809.5 (2001); Mineral Pol'y Ctr. v. Norton, 292 F. Supp. 2d 30, 40 (D.D.C. 2003). A watered-down interpretation of "undue degradation" was upheld in Theodore Roosevelt Conservation P'ship v. Salazar, 661 F.3d 66 (D.C. Cir. 2011).
328. *See* National Forest Management Act of 1976, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended in scattered sections of 16 U.S.C.).
329. 16 U.S.C. § 1604(g)(3)(C) (2006).
330. *Id.* § 1604(g)(3)(E)(i), (iii).
331. Sierra Club v. Espy, 38 F.3d 792, 800 (5th Cir. 1994).
332. *Id.*; Lamb v. Thompson, 265 F.3d 1038, 1048–50 (10th Cir. 2001); Wilderness Soc'y v. Thomas, 188 F.3d 1130, 1136 (9th Cir. 1999); Mountain States Legal Found. v. Glickman, 92 F.3d 1228, 1238 (D.C. Cir. 1996).
333. 16 U.S.C. § 1604(g)(3)(B) (2006).
334. 3 Coggins & Glicksman, *supra* note 303, § 34:15.
335. For notable exceptions, *see* Seattle Audubon Soc'y v. Moseley, 798 F. Supp. 1473 (W.D. Wash. 1992), *aff'd*, 998 F.2d 699 (9th Cir. 1993) (enjoining timber sales on grounds that the diversity duty requires planning for the entire biological community, such that a management plan that would preserve a management indicator species such as the owl, only to exterminate other species, would conflict with the duty); Seattle Audubon Soc'y v. Moseley, 798 F. Supp. 1484 (W.D. Wash. 1992) (similar).
336. *See, e.g.*, Forest Guardians v. U.S. Forest Serv., 641 F.3d 423, 440–43 (10th Cir. 2011) (upholding the agency's approval of a timber sale even though population levels for a management indicator species were below the minimum viable population threshold and were declining, and the project called for destruction of additional habitat); Sierra Club v. Robertson, 810 F. Supp. 1021, 1028 (W.D. Ark. 1992), *aff'd in part, vacated in part on other grounds,* 28 F.3d 753 (8th Cir. 1994). *See also* Sierra Club v. Espy, 38 F.3d at 800 (concluding that the protection of diversity "means something less than preservation of the status quo but something more than eradication of species").
337. From 1982 to 2005, the Forest Service's regulations implementing NFMA's diversity provision required sufficient habitat to support viable populations of wildlife and fish species—"a minimum number of reproductive individuals . . . well distributed so that those individuals can interact with others in the planning area." 36 C.F.R. § 219.19 (1982). In 2005, the regulation was replaced with much more general provisions on ecological, social, and economic sustainability. 36 C.F.R. §§ 219.10, 219.19-.21 (2011). In 2012, the agency amended its planning regulations again. The new version adopts "a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area." National Forest System Land and Resource Management Planning Final Rule, 77 Fed. Reg. 21162, 21212 (Apr. 9, 2012) (to be codified at 36 C.F.R. pt. 219.9(a)). Among other things, the regulations require each forest plan to include standards or guidelines "to maintain or restore the diversity of ecosystems and habitat types throughout the plan area," including components to maintain or restore "(i) Key characteristics associated with terrestrial and aquatic ecosystem types; (ii) Rare aquatic and terrestrial plant and animal communities; and (iii) The diversity of native tree species similar to that existing in the plan area." *Id.* at 21,265. It remains to be seen whether the 2012 regulations meaningfully constrain agency discretion.
338. Additional guidance might be drawn from the more stringent constraints on approval of activities that would adversely affect National Forest wilderness study areas in state-specific wilderness legislation. *See, e.g.*, Montana Wilderness Study Act § 3(a), Pub. L. No. 95-150, 91 Stat. 1243 (1977); Russell Country Sportsmen v. U.S. Forest Serv., 668 F.3d 1037, 1042–44 (9th Cir.

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B. The Lessons of Federal Lands for Protecting Water Resources Against Degradation

Among the federal land management statutes discussed in the previous section, the Park Service Organic Act and the NWRSIA seem to provide the most appropriate guidance for strengthening the CWA's antidegradation requirements. Although the WSRA can supply some lessons for the CWA, its aspirations for maintaining free-flowing rivers are not as specific as the non-impairment provisions of those other two laws with respect to anything but dams. Additionally, its provisions are not as closely related to protecting the biological, chemical, or physical integrity of the system.[339] As a result, the WSRA remains an underutilized tool and, arguably, a less optimal analogue. The Wilderness Act already protects the components of high-quality waters that run through federally designated wilderness areas by prohibiting, with limited exceptions, activities that would detract from wilderness values, including commercial activities that might otherwise threaten water quality.[340] The Act provides a less than ideal model for protecting high-quality waters outside the boundaries of wilderness areas, however, because a ban on all discharges from industrial and commercial activities would impose unrealistic constraints that upset the balance between environmental protection and economic growth that Congress endorsed in 1987 by codifying EPA's existing antidegradation policy.[341] As for the NFMA, its production-oriented focus and delegation of sweeping agency discretion are not particularly helpful to efforts to strengthen the CWA's antidegradation policy.[342]

The Park Service Organic Act's goals and mandates could be tailored to provide appropriately enhanced protection for the nation's high-quality waters. The Act aims to conserve and prevent impairment of park scenery, wildlife, and other natural resources for the enjoyment of both present and future generations.[343] Park Service policies recognize that the conservation of plants and animals entails not just protecting individual species but maintaining them "as parts of the natural ecosystems of parks."[344] The Service also sees the conservation of "evolving genetic diversity" as part of its mission.[345] The CWA's antidegradation policy could be amended to define "degradation" as impairment of water quality in a covered water body that either results in impairment or threatened impairment of an existing use—especially fishing, swimming, or higher uses—or adversely affects the ecological resilience of the water body, such that its capacity to continue to provide important ecosystem services is reduced. Such a dual standard would measure degradation by two yardsticks—one that focuses on suitability for particular human uses and another that focuses on the role of the affected water body in the ecosystem of which it is a part.

Yet the Organic Act is not perfect, and impairment of resources within the National Park System has occurred.[346] Like the rest of North America, the System has experienced sharp declines in the diversity and abundance of animal and plant species.[347] The culprits are found, for the most part, outside of park boundaries on adjacent federal, state, and private lands.[348] Such "external threats . . . could destabilize park wildlife populations and critical ecosystem services, such as clean water and flood control."[349] In particular, a 2009 National Parks Science Committee Report observed that there must be far greater protection for freshwater systems if parks are to remain a "haven . . . for once-widespread species and ecosystems."[350] The "external threats" problem is relevant to the antidegradation policy because a Tier 3 ONRW river that runs through a wilderness area or a park, for example, may have segments that are not given Tier 3 protections, and those segments may be degraded in ways that adversely affect the Tier 3 segment.[351]

2011) (holding that this mandate gave the agency the authority not only to maintain, but also to enhance the wild, natural characteristics by closing off pre-existing routes to motor vehicles). Although the court reasoned that "[t]he Act simply requires the Service to preserve a study area's wilderness character against *decline,*" it found that "[e]nhancement of wilderness character is fully consistent with the Study Act's mandate, although the Study Act does not require it." *Id.* at 1042. The Idaho district court reached a similar conclusion under the Wyoming Wilderness Act in *Greater Yellowstone Coal. v. Timchak*, No. CV-06-04-E-BLW, 2006 WL 3386731, at *3–6 (D. Idaho 2006), overturning a decision to permit increased heli-skiing in a WSA because the Service failed to show that available opportunities for solitude would be maintained despite the increased use.

339. *Compare* 16 U.S.C. § 1271 (2012), *with* 16 U.S.C. § 1 (2006) *and* 16 U.S.C. § 668dd(a)(2) (2006).

340. Nat'l Wild & Scenic Rivers System, Implementing the Wild & Scenic Rivers Act: Authorities & Roles of Key Federal Agencies (1999), *available at* http://www.rivers.gov/rivers/documents/federal-agency-roles.pdf ("River-administering agencies are directed to cooperate with the EPA and appropriate state water pollution control agencies 'for the purpose of eliminating or diminishing the pollution of waters of the river' (Section 12(c) of the WSRA). The CWA, Floodplain and Wetlands Executive Orders, and the SDWA provide EPA's authority to protect water quality.").

341. Ross W. Gorte, Cong. Research Serv., R41649, Wilderness Laws: Statutory Provisions & Prohibited & Permitted Uses (2011), *available at* http://www.wilderness.net/NWPS/documents/Wilderness%20Laws-Statutory%20Provisions%20and%20Prohibited%20and%20Permitted%20Uses.pdf; U.S. Envtl. Prot. Agency, *supra* note 39.

342. *See supra* Part III.A.5.

343. 16 U.S.C. § 1.

344. Management Policies 2006, *supra* note 267 , § 4.4.1. *See id.* § 1.4.7.2 ("The Service will also strive to ensure that park resources and values are passed on to future generations in a condition that is as good as, or better than, the conditions that exist today.").

345. *Id.* § 4.4.1.2 ("The Service will strive to protect the full range of genetic types (genotypes) of native plant and animal populations in the parks by perpetuating natural evolutionary processes and minimizing human interference with evolving genetic diversity."). *Compare* NWRSIA, 16 U.S.C. § 668dd (2006) (explicitly recognizing "restoration of the fish, wildlife, and plant resources and their habitats" as a mission of the National Wildlife Refuge System "where appropriate").

346. Keiter, *supra* note 271, at 92.

347. *See* Nat'l Parks Sci. Comm., D-1589A, National Park Service Science in the 21st Century 1 (2d ed. 2009) [hereinafter Nat'l Parks Sci. Comm.] (observing that "national parks with decreased biological diversity and diminished natural systems can in no way be considered unimpaired," and arguing that establishing a "fully constituted science program" is essential to the non-impairment mandate). *See also* Debra L. Donahue, *Trampling the Public Trust*, 37 B.C. Envtl. Aff. L. Rev. 257, 264–65 (2010) (describing how the loss of a top predator has had devastating ripple effects in Yellowstone, Yosemite, Wind Cave, Zion, and Olympic National Parks and in Jasper National Park in Canada).

348. Keiter, *supra* note 271, at 92.

349. *Id.*

350. Nat'l Parks Sci. Comm., *supra* note 347, at 3.

351. *See, e.g.*, Arkansas v. Oklahoma, 503 U.S. 91, 91 (1992) (approving discharge by sewage treatment facility into a portion of the Illinois River in Arkansas that is upstream from a segment within Oklahoma that had been designated as a scenic river).

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Still, water quality within the boundaries of the National Park System seems to be at least somewhat better than outside of the System. In 1993, the Park Service established a nationwide goal that by 2008 more than ninety-nine percent of streams and rivers managed by the Service would meet state and federal water quality standards adopted under the CWA.[352] To achieve this goal, the Service, in partnership with the U.S. Geological Survey, is preparing inventories of water quality in Park units.[353] Not surprisingly, water quality within and among units varies significantly, making generalizations difficult.[354] For example, water bodies within Yellowstone National Park "continue to be of high quality,"[355] but in the more populous Mid-Atlantic Region, twenty-one percent of the ONRWs were impaired and none had attained all of their designated uses.[356] System-wide, the Park Service has fallen short of its ninety-nine percent water quality compliance goal, but it appears to be taking steps in the right direction under the Organic Act and, where applicable, the ONRW provisions of the antidegradation policy.[357] Yet, the existence of significant noncompliance even in ONRWs highlights the need for the imposition of restoration responsibilities on states whose high quality, or otherwise outstanding, waters violate water quality standards or other aspects of the antidegradation policy.[358]

The NWRSIA can serve as another appropriate guidepost for improving the CWA's antidegradation program. In one sense, at least, it may be even more useful than the Park Service Organic Act. Economic uses of wildlife refuges may be allowed, but decisionmakers are required to make an explicit finding that such uses will help achieve either refuge purposes or the overall mission of the Wildlife Refuge System, and also to prevent such uses from impairing refuge resources.[359] Moreover, the statute unequivocally directs the FWS "to *sustain* and, where appropriate, *restore and enhance*, healthy populations of fish, wildlife, and plants."[360] Like the Organic Act, the NWRSIA promotes the biological diversity and integrity of the system. The NWRSIA, however, includes more substantive management criteria with relatively rich detail, and the Refuge Management Policy adds even more detail.[361] As Professor Robert L. Fischman has observed, the Refuge Management Policy elevates promotion of the Wildlife Refuge System's conservation mission, supported by the integrity-diversity-health mandate, above the promotion of wildlife-dependent recreation.[362] This level of detail cabins the agency's discretion, and empowers citizens and courts to ensure implementation of the Act's conservation/integrity requirement.

Drawing on the NWRSIA example, the CWA's antidegradation policy could declare that discharges from new or expanded economic uses that would adversely impact Tier 2 waters cannot be permitted absent a specific finding that the new or expanded use meets certain clearly delineated criteria demonstrating its necessity to the community or the state. In addition, the antidegradation policy could declare the issuance of permits involving discharges of specified pollutants (or amounts of pollutants) to be incompatible (or presumptively incompatible) with the maintenance of the high-quality waters protected by the policy.[363] The policy could distinguish among the tiers of water bodies by limiting this approach to new or expanded discharges into Tier 1 waters, but extending it to all discharges, including existing discharges, for Tier 3 (and perhaps Tier 2) waters. This approach resembles the prohibition in FWS regulations on approval of certain uses of the wildlife refuges absent a showing of compatibility.[364]

IV. Recommendations for Strengthening the Antidegradation Program

Building on forty years of experience with the CWA's antidegradation policy, and on the comparative strengths and weaknesses of the CAA and federal land management statutes, we offer four recommendations to improve the antidegradation policy. Each of the recommendations responds to one of the deficiencies in the antidegradation program identified in Part II.C above.

First, we recommend a federal regulation requiring states to designate waters within national parks and wildlife refuges and other waters of "exceptional ecological significance" as ONRWs in their WQS inventories.[365] The current regulations fail to provide any direction regarding the designation processes, beyond referencing parks and refuges; as a result, there is inadequate protection for some of the nation's most

352. Frank A. Deviney Jr. et al., *Water Quality Monitoring in the Mid-Atlantic Network of the National Park Service*, App. 4, p. 15 (2005) (citing Goal Ia4A), *available at* http://science.nature.nps.gov/im/units/midn/Phase_1_Report/Appendix_4._WQ_Scoping_Report.pdf.

353. *Freshwater Resources Management*, Nat'l Park Serv., http://www.nature.nps.gov/rm77/freshwater/waterresources.cfm (last updated Feb. 5, 2004).

354. *Id.*

355. Nat'l Park Serv., NPS/GRYN/NRDS—2011/310, Greater Yellowstone Network Water Quality Monitoring Annual Report, January 2009–December 2009 ix (2011), *available at* http://www.greateryellowstonescience.org/subproducts/214/7.

356. Deviney et al., *supra* note 352, at 2.

357. *Water Quality Program*, Nat'l Park Serv., http://www.nature.nps.gov/water/waterquality/ (last updated Feb. 2, 2012); *see also Baseline Water Quality Data Inventory & Analysis Reports*, Nat'l Park Serv., http://www.nature.nps.gov/water/horizon.cfm (last updated Jul. 2, 2012).

358. Deviney et al., *supra* note 352, at 17.

359. Fischman, *supra* note 306, at 111; *see supra* notes 310–11.

360. 16 U.S.C.A. § 668ee(4) (2006) (emphasis added).

361. Fischman, *supra* note 306, at 111.

362. *Id.* at 112, citing U.S. Fish & Wildlife Serv., Refuge Manual, 605 §§ 1.13(B), 1.8(B), (D)(3) (2000). *See also* U.S. Fish & Wildlife Serv., Refuge Management 605 §§ 1.9–1.10, *available at* http://policy.fws.gov/ser600.html.

363. Under the presumptive incompatibility approach, the burden would shift to permit applicants to demonstrate that discharge of the pollutants or amounts involved would not result in impermissible degradation, and therefore would be compatible with the policy.

364. *See supra* notes 312–15 and accompanying text.

365. *See* Water Quality Standards Regulation, 63 Fed. Reg. 36742, 36786 (July 7, 1998). EPA defines "waters of exceptional ecological significance" as those "water bodies which are important, unique, or sensitive ecologically, but whose water quality, as measured by the traditional characteristics (dissolved oxygen, pH, etc.) may not be particularly high, such as thermal springs. Waters of exceptional ecological significance also include waters whose characteristics cannot adequately be described by these parameters." *Id.*; *see also* Water Quality Standards Regulation, 48 Fed. Reg. at 51403; Brawer, *supra* note 127, at 20–21 (recommending more well-defined processes for citizen petition and designation of ONRWs).

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important aquatic resources.[366] In 1998, EPA suggested in an advance notice of proposed rulemaking that states and tribes should be required to establish a nomination process with criteria guidelines so that interested citizens or groups could petition for designation of certain waters as ONRWs.[367] The New Mexico experience demonstrates how public involvement can promote the process of protecting high-quality waters if citizens have a viable procedural mechanism and if sufficient criteria are delineated to guide agency responses and allow meaningful judicial review.[368] These criteria would elaborate on the meaning of "exceptional ecological significance," perhaps using factors similar to those by which the 2012 Forest Service planning regulations measure ecosystem integrity.[369]

In addition, states should be required to take concrete steps, including the reduction of aggregate discharges, to restore the quality of Tier 3 and other degraded, but otherwise high-quality, waters covered by the antidegradation policy. EPA would be obliged to determine during each triennial review of state water quality standards whether states have complied with this responsibility. EPA's failure to require restoration when the policy demands it would then be judicially reviewable.[370] The imposition of a restoration mandate would be consistent with the CWA's overarching goal of "restor[ing]" as well as maintaining the integrity of the waters of the United States.[371]

Second, EPA should promulgate a regulatory definition of "degradation." Formalizing EPA's informal guidance directing the regions to consider "assimilative capacity" would be a step in the right direction. This step, however, would not go far enough because it may result in new or increased discharges on large lakes and rivers whose assimilative capacity appears to be great, but may not in fact be as great as presumed, or whose aquatic environment may not respond in a predictable fashion to pollutants. In addition, a mandate to consider assimilative capacity in isolation may still allow multiple discharges over time to severely affect the integrity of a water body without ever undergoing a comprehensive antidegradation review.[372] Looking to the NWRSIA[373] and the Organic Act[374] for guideposts, the new definition should include substantive criteria and thresholds or triggers to guide the permitting process to better meet the goals of the antidegradation policy and the CWA as a whole and to enable meaningful citizen involvement and judicial review. As suggested above, drawing on the analogy to the Park Service experience, "degradation" could be defined as impairment of water quality that either results in loss or threatened loss of an existing or potentially viable use—especially fishing, swimming, and higher uses—or adversely affects the ecological resilience of the water body such that its capacity to continue to provide important ecosystem services is reduced.[375] In addition, based on the NWRSIA example, the issuance of permits involving discharges of specified pollutants (or amounts of pollutants) could be declared incompatible (or presumptively incompatible) with maintenance of the high-quality waters protected by the antidegradation policy.[376]

Third, states should be required to extend their antidegradation programs to nonpoint source runoff.[377] One of the biggest holes in the antidegradation policy is the failure to regulate nonpoint sources that degrade water quality.[378] States have the discretion to extend their antidegradation requirements to nonpoint sources, but it appears that, at present, states cannot be forced to do so.[379] Even when state antidegradation requirements nominally apply to nonpoint sources, those requirements sometimes effectively have no substantive content.[380] As noted above, a few courts have upheld EPA's approval of a state's water quality standards that exempted nonpoint source discharges from antidegradation requirements.[381] However, EPA once took the position that "[n]onpoint source activities are *not* exempt from the provisions of the antidegradation policy."[382] A persuasive argument can be made that EPA should reinvigorate this position, and indeed that it has an affirmative duty to ensure that state programs for nonpoint source pollution—including antidegradation programs—do not defeat the CWA's objectives.[383] Some judicial interpretations of the CWA support state efforts to control nonpoint source pollution through antidegradation requirements.[384] The water quality standard-setting process applies to waters polluted by both

366. Adler, *supra* note 109, at 287.
367. Water Quality Standards Regulation, 63 Fed. Reg. at 36786.
368. *See supra* notes 142–49 and accompanying text.
369. *See supra* note 337 and accompanying text (regarding National Forest System Land Management Planning, 36 C.F.R. § 219.8(a)(1) (2011) (listing as factors relevant to the protection of ecosystem integrity (i) interdependence of terrestrial and aquatic ecosystems, (ii) an area's contributions to ecological conditions within the broader landscape influenced by the area, (iii) conditions in the broader landscape that may influence the sustainability of resources and ecosystems within the affected area, (iv) system drivers such as dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; (v) the ability of terrestrial and aquatic ecosystems to adapt to change, and (vi) opportunities for landscape scale restoration).
370. *See* 5 U.S.C. §§ 704, 706(1) (2006) (authorizing review of final agency action and of an agency's failure to act to fulfill discrete statutory or regulatory mandates).
371. CWA § 101(a), 33 U.S.C. § 1251(a) (2006).
372. Ohio Valley Envtl. Coal. v. Horinko, 279 F. Supp. 2d 732, 752 (S.D. W. Va. 2003).
373. 16 U.S.C. § 668dd(a) (2006).
374. 16 U.S.C. § 1 (2006).
375. *See supra* Part III.B; *see also* Hines, *supra* note 8 (quoting Fed. Water Pollution Control Admin., U.S. Dep't of Interior, Guidelines for Establishing Water Quality Standards for Interstate Waters 5, 7 (1966)) ("*[i]n no case* will standards providing for less than existing water quality be acceptable"; standards shall provide for "[t]he maintenance and protection of *quality and use or uses* of water now of a higher quality *or of a quality suitable for present and potential uses*") (emphasis added).
376. *See supra* notes 363–64 and accompanying text.
377. Modesitt, *supra* note 207, at 220–21.
378. *Id.*
379. *Id.* at 195, 221 (assessing application of state antidegradation programs to nonpoint source pollution).
380. *See, e.g.*, Newton County Wildlife Ass'n v. Rogers, 141 F.3d 803, 810 (8th Cir. 1998) (concluding that "the Arkansas statewide policy for nonpoint sources is so broadly stated that the Forest Service was not arbitrary or capricious in concluding this policy added nothing to its compliance obligations under federal environmental laws").
381. *See supra* note 169 and accompanying text.
382. Questions & Answers, *supra* note 26, at 6 (emphasis added); *see* U.S. Envtl. Prot. Agency, *supra* note 39, at § 4.8.
383. CWA § 101(a), 33 U.S.C. § 1251(a) (2006).
384. *See supra* Part II.B.1.

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point source and nonpoint source pollution.[385] Further, EPA regulations already require the states to "achieve[] . . . cost-effective and reasonable best management practices for nonpoint source control."[386]

Fourth, to address EPA's failure to provide consistent follow through on requiring states to properly implement the antidegradation policy, mandatory state planning and assessment responsibilities could be added. For example, states might be required to consider as part of the triennial water quality standard revision process whether the designation of additional Tier 1, 2, or 3 waters is appropriate and document the results of that assessment. In addition, the states should be required to explain any refusal to designate ONRWs. EPA would have to consider the state's explanation in deciding whether to approve or disapprove state water quality standards as consistent with CWA requirements.[387] EPA determinations would then be judicially reviewable. The CWA already requires states to engage in a continuing planning process that includes "adequate implementation . . . for revised or new water quality standards," which of course include the antidegradation policy.[388] State planning responsibilities are far less rigorous under the CWA than they are under the CAA, but efforts by EPA during the Clinton Administration to mandate planning obligations to achieve water quality standards similar to state implementation plan duties under the CAA ran into political opposition.[389] Enhancement of selected aspects of state water quality standard implementation, such as those relating to compliance with the antidegradation policy, is worth another look.

V. Conclusion

The four reforms suggested in Part IV would promote the primary goals of the antidegradation policy, especially providing a margin of safety, protecting high-value natural resources, preventing the development of pollution havens, and balancing environmental goals and economic growth opportunities.[390] These reforms would also do much to move the nation's water bodies beyond the "least common denominator" of fishable/swimmable waters and toward the CWA's overarching goal of maintaining, as well as restoring, the chemical, physical, and biological integrity of aquatic environments. Efforts to prevent degradation of high-quality water bodies are analogous to efforts to prevent impairment of clean airsheds and ecologically important natural resources found on the federal lands. The public land management statutes, in particular, provide a host of widely divergent models for use and protection of natural resources. Statutory provisions that prevent impairment of the national parks and wildlife refuges could serve as models for strengthening the CWA's antidegradation program.

385. *See* CWA § 303, 33 U.S.C. § 1313 (2006) (drawing no distinction between pollution from point sources and nonpoint sources); Nw. Envtl. Advocates v. City of Portland, 56 F.3d 979, 986 (9th Cir. 1995) ("[N]owhere does Congress evidence an intent to preclude the enforcement of water quality standards that have not been translated into effluent discharge limitations.").

386. 40 C.F.R. § 131.12(a)(2) (2011); *see* David Zaring, *Best Practices*, 81 N.Y.U. L. Rev. 294, 326–27 (2006) (stating that "best practices regulation is currently the only form of federal regulation of runoff or 'nonpoint source' pollution").

387. CWA§ 303(c)(4), 33 U.S.C. § 1313(c)(4).

388. *Id.* § 1313(e)(3)(F).

389. *See* Oliver A. Houck, *The Clean Water Act Returns (Again): Part I, TMDLs and the Chesapeake Bay*, 41 ELR 10208, 10213 (Mar. 2011).

390. *See supra* Part I.C.